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# Foreign Agriculture

*..... a Review of Foreign  
Farm Policy, Production,  
and Trade*

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## IN THIS ISSUE

. . . .there is presented a recent thought-provoking talk by Henry A. Wallace, Secretary of Agriculture, in which he discusses the general question of the creditor position of the United States and the relation of our import policy to this position. He points out, for example, that our creditor status has been considerably reduced in recent years and that our imports of goods and services have been increasing in relation to our exports. This progress in adjusting our balance of payments situation to our current creditor position has taken place, however, on the basis of a much lower volume of trade than formerly existed.

Future issues of Foreign Agriculture will contain articles discussing in more detail certain of the questions raised by Secretary Wallace with particular reference to their significance to our agricultural export trade.

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## AN AMERICAN POLICY ON IMPORTS

. . . . . By Henry A. Wallace  
Secretary of Agriculture\*

A few years ago I wrote a pamphlet under the title "America Must Choose" in which I discussed what seemed to me to be some of the fundamental considerations bearing on the international economic relations of the United States. I attempted to point out the significance of the change in the debtor-creditor position of the United States and the necessity, resulting from this change, of our becoming more "import minded" if we were to continue to export agricultural and industrial products on a large scale.

I have no way of knowing the extent to which the American people have become reconciled to larger imports more in keeping with our creditor position, but I am afraid there has not been very much progress in this direction. I do know that there are a good many people in the United States who think that imports of foreign goods are intrinsically bad. Such people take the point of view that the United States, with its vast resources, should be able to produce practically anything that this country needs. Most of them will make an exception of some tropical products, such as coffee and tea, and possibly certain minerals of which we have no resources at all. But, if there is any possibility of our being able to produce substitutes for anything that is imported, this group apparently believes that we should do it even though the cost to our consumers of these substitute products may be exceedingly high.

It is evident that this is a point of view that is congenial to American producers of those things not now produced to the full extent of our domestic requirements. It is also evident that such a point of view ignores the interests of the producers of our export products. It likewise ignores the interests of those who are engaged in handling and transporting the imported goods. And it ignores the interests of the consumer. The thought that, in the long run, it may also be adverse to the

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\* Address of Secretary Wallace before the National Council of American Importers and Traders, Inc., New York, N. Y.; April 29, 1937.

interests of the very people who support it seems to be making very little headway. These people overlook the fact that one of the most effective ways of raising our standard of living is to exchange our surplus products for the goods and services of other countries.

More than 3 years have passed since "America Must Choose" was written. In the meantime many things have happened which have borne significantly on our economic relations with the rest of the world. For example, we have had a series of unfavorable growing seasons, which have resulted in cutting down exports of agricultural products and, at the same time, have contributed to a substantial increase in the imports of some agricultural products. Our merchandise trade balance has been diminishing, and in 1936 exports were only slightly larger than imports. In recent years, foreigners have been purchasing large amounts of American stocks and bonds and repurchasing foreign securities formerly held in the United States. Our net creditor position has thereby been substantially reduced.

These are important developments. They may mean that it is no longer as necessary as it seemed to be 3 years ago to place so much emphasis on larger imports, or they may mean just the opposite. In any case, it will pay us to take stock of the present situation with respect to our creditor position and our import policy. That is what I propose to do here.

During the early years of our history we found it necessary to obtain large amounts of capital from Europe in order to construct our railroads and develop our industries. We paid for this capital and the interest on it by exporting a great deal more than we imported. These exports consisted to a large extent of agricultural products. In this sense it may be said that agriculture provided the means for developing our industrial life. During this period, which extended up to the World War, we did not have to worry much about our import policy. In fact, a restrictive policy on imports was not a serious matter from the standpoint of our balance of payments situation. Its significance lay rather in the fact that it placed a burden on consumers, and particularly on farmers, who to a large extent had to sell their products on a world basis.

During the World War, and for a few years thereafter, the greatly increased need of the belligerent countries in Europe for goods of all kinds enabled the United States to export so much at such high prices that we offset all of our debts and, in addition, made heavy loans to our former creditors. The result was that by 1923 our net receipts of interest and debt payments from foreigners amounted to over \$500,000,000 annually, whereas before the War we had to make net payments of interest and dividends to foreigners of over \$200,000,000 a year. In other words, it was no longer necessary, from the point of view of our international

balance of payments, for the United States to maintain a heavy balance of exports over imports. On the contrary, the logic of the situation demanded that we should have an excess of imports of goods and services over exports in order to provide the means for foreigners to pay interest and principal on their debts.

But the logic of the situation did not prevail. Instead we increased our restrictions on imports in the Tariff Act of 1922 and in the Tariff Act of 1930. In the meantime heavy additional loans made to foreign countries by American citizens provided the foreign purchasing power that made it possible for us to continue to export on a very large scale throughout that period. These loans ceased at the beginning of the world depression and have not since been resumed.

During the early years of the depression our exports and imports showed drastic declines. A part of these declines, in terms of value, were, of course, due to greatly reduced prices but the physical volume of exports and imports also fell off substantially because of increased barriers to trade and extremely depressed economic conditions both in this country and abroad.

The important thing from the standpoint of our present analysis, however, is that our exports fell only a little more rapidly than our imports so that there still remained a problem of providing foreigners with the means to make payments on their debts to us. A part of this need was removed by the moratorium on war debts and by defaults in private foreign obligations. But even in the worst years of the depression our net receipts from foreigners, of interest and dividends, were no less than \$365,000,000 a year. During this period the situation was temporarily tided over by an outflow of short-term banking funds. In other words, we made loans on a short-term basis.

During the last 3 years, that is 1934, 1935, and 1936, our balance of payments situation has been dominated by the large inflow of foreign capital. To the extent that this inflow of foreign capital represents long-term investment in the United States, our creditor position has been effectively decreased. But even assuming that all of the capital inflow represents such permanent investment, we are still an international creditor to the extent of about \$5,000,000,000. To put the matter a little more concretely, during the year 1936 foreigners made payments to us in excess of our payments to them in respect to interest and dividends of \$375,000,000. That is to say, the total amount of dollar exchange that had to be found by foreigners to transfer to the United States was increased by \$375,000,000 on account of interest and dividends alone.

Foreigners were, as a matter of fact, able to obtain this exchange during 1936, without sending us gold, because our imports of goods and services exceeded our exports by \$507,000,000, or more than enough to

meet the payments that they were actually making on their debts to us. This was the first year since we became a creditor country that our imports of goods and services exceeded our exports by an amount equaling or exceeding the net payments of foreigners on their debts.

Does this mean that, aside from the large inflow of capital and the accompanying imports of gold, we have reached a point where our imports of goods and services are taking care not only of our exports but also of the net payments by foreigners resulting from our creditor position? If so, on what terms?

In order to answer these questions, it is necessary to examine some of the items entering into our balance of payments situation in 1936. The first and most important of these is, of course, the merchandise trade. In 1936 our exports of merchandise exceeded our imports by only \$34,000,000, as compared with \$478,000,000 in 1934. This decline in our "favorable" balance of merchandise trade was caused by a much more rapid increase in our imports than in our exports.

Improved economic conditions in this country constitute an important reason for the more rapid increase in imports. But another outstanding reason why imports increased much faster than exports can be found in the agricultural situation. As a result of the drought of 1936 and the continuing effects of the drought of 1934, we have been importing an unusually large quantity of competitive farm products. Two of the principal items are wheat and corn. We have imported substantial quantities of these and other products to supplement our domestic production, which was reduced by unfavorable weather conditions.

On the other hand, our exports of agricultural products not only failed to increase but actually declined in 1936, largely for the same reason that caused our increased imports, namely poor growing conditions in this country, so that, while our exports of industrial products showed a substantial rise, our total exports were only 7.5 percent higher in terms of value in 1936 than in 1935.

These, then, were the principal influences that worked toward a reduction in our balance of merchandise trade in 1936. It is especially important to note, however, that this near balance of merchandise trade took place on a low level relative to our trade prior to the depression. Our domestic exports in 1936 were 53 percent less in terms of value and 38 percent less in terms of quantity than in 1929. Our imports, on the other hand, were lower by 45 percent in value and by 11 percent in quantity. In other words, while the difference between our imports and exports has been greatly reduced, we are not importing enough more goods to provide foreigners with purchasing power sufficient to buy our agricultural and other products on a scale comparable to that before the depression.

With an approximate balance in our merchandise trade we made net payments to foreigners on service items, excluding interest and dividends, of approximately \$540,000,000. The largest single item in this "invisible" trade is the expenditures of American tourists in foreign countries. These expenditures were only about two-thirds as much as they were in the average year in the last half of the twenties but, in view of the fact that our people are more prosperous and in view of the depreciation of currencies in the former gold bloc countries, there are good prospects of their continuing to increase, in case there is no war.

It is to be hoped that this is the case. These tourist expenditures constitute the most painless way I know of to put purchasing power into the hands of foreigners. It is true that there are some murmurs against them but these murmurs are a gentle spring rain compared with the thunder storms of protest that blow up when a little more than the usual quantity of foreign goods lands upon our shores. At the best, however, it will be difficult for these "invisible" imports to take the place of an increase in the imports of goods.

This brief survey of the various items which enter into our international accounts makes it clear that though we have made progress toward an adjustment of the balance of payments to the requirements of our current creditor position, we have done so at a level of trade which is far too low to satisfy the productive capacity of American agriculture and industry. If we are to avoid drastic and costly readjustments of our economy, we must increase our exports. If we are to sell foreigners more American goods, we must purchase more goods from abroad. But before examining into possible methods of increasing our imports, it might be well to dispose of two possible alternatives which are sometimes suggested.

The first alternative, which we should at least note in passing, would be a definite renewal of large loans by Americans to foreign countries, the device that was used throughout the decade of the twenties. This does not seem to be practical when we consider the defaults that have been made on both government and private debts owed by foreign countries and when we consider also that the nationals of many of these countries are now sending capital into the United States.

A second alternative, which some people say is actually being followed, would be to return to the position of a debtor country. This could be brought about by importing capital from abroad to the extent of about \$5,000,000,000. But I do not know where this amount of permanent foreign capital is likely to be found, nor whether we are willing for foreigners to accumulate that much more claim on American industry.

If we conclude that we are not likely for some time to come to resume heavy loans to foreign countries and that we are not likely to

change from a creditor to a debtor country in the near future, there remain only two alternatives. One is to reduce our exports in relation to our imports on a more or less permanent basis. The other is to increase our imports in relation to our exports.

A reduction in our exports, particularly from recent low levels, is distinctly undesirable from the standpoint of both agriculture and industry. With respect to agriculture, it would mean a permanent and difficult readjustment in our productive plant with more emphasis being placed on those things which we do not now produce in excess of our domestic requirements and for which the domestic demand is capable of considerable expansion, and a reduction in the production of the things we have been exporting. This would mean a drastic adjustment in acres and men in our cotton, corn, and winter wheat belts.

The other alternative, that of increasing our imports in relation to our exports, seems to me to be somewhat more attractive. Let us examine briefly certain policies along this line and see which of them offers the best possibilities.

We may take first the two extremes; that is, a policy of relatively unrestricted imports as against a policy that looks toward the smallest possible imports. As to unrestricted imports, I do not think that anyone who takes a reasonably practical view of the current world situation would believe that we could follow this policy. We will undoubtedly continue to operate under a protective system. We cannot afford to expose our industries and agriculture to unrestricted foreign competition.

On the other hand, a policy calling for the smallest possible imports, or self-sufficiency, seems almost equally impracticable. In the first place, it necessarily implies a lower standard of living than we could have with a free trade policy. In the second place, it would involve some very drastic adjustments in certain segments of our national economy, particularly in agriculture. And, finally, it would require a degree of regimentation much beyond anything we have contemplated to date.

It seems to me that the only practicable course is one between these two extremes. Such a middle course might involve a liberalization of our import policy as compared with what it has been in the past but accompanied by a more direct and flexible control over imports than has heretofore been the case in this country. That is to say, our import restrictions would in general be lower than they have been but we would attempt to take care of special situations through rather direct import control. We would plan for larger imports.

Perhaps the most reasonable plan would be one which sought to reduce on a selective basis those duties, either on industrial or agricultural products, which seem to have the least justification from the standpoint of the general welfare. In other words, duties would be reduced on specialty industrial and agricultural products which, for various reasons of natural or human resources, the United States is not in a position to produce to anything like as good advantage as certain foreign countries, and especially those things produced by monopolies which are charging all the traffic will bear. This should result in a well-distributed increase in our imports.

What are some of the implications of such a program? In the first place, it would mean that there would have to be some readjustments in agricultural and industrial production in this country. But such adjustments would be mainly in those lines of activity which are not well suited to American conditions rather than in those things for the production of which American resources are especially well suited.

In the second place, we would be taking steps that would make it easier for foreign countries to buy our products. This is the basic merit of the reciprocal trade agreements program which is now being pursued by the United States. We are, in fact, obtaining reductions in foreign import restrictions in exchange for duty reductions on our part and in this way are tending to assure that foreigners will actually use the dollars resulting from increased exports to us to pay for larger imports of American goods.

Another advantage of the trade agreements program, from the standpoint of our import policy, is that duty reductions made by the United States are only made after careful and impartial study of such things as the importance of our domestic production, price trends and policies, and the past relation of imports to production. Whenever necessary, special safeguards are introduced in connection with duty cuts. For example, duty reductions on certain agricultural products have been made only on limited quantities. It is a new technique in tariff making.

Another and perhaps the outstanding advantage of this policy of reciprocal trade agreements is that it sets an example of breaking down trade barriers to the rest of the world. It thus tends to ease all kinds of tensions between nations which eventually may lead to war. It is a policy that makes for peace.

On the other hand, we must recognize some disadvantages and difficulties. Bilateral negotiations, country by country, take a great deal of time. We have not yet reached agreements with some of the countries that represent our most important agricultural markets. Those countries

with which we have reached agreements have for the most part shown great reluctance to reduce their barriers to imports of agricultural products to the level that prevailed prior to the world depression. It has been somewhat easier to secure reductions in import duties on industrial products in the agricultural countries. Moreover, as one contemplates the European scene today, it is impossible to become particularly enthusiastic about the prospects of restoring our markets in those countries, at least for such things as wheat and pork, which they can themselves produce.

Even at best, in years of ordinary weather, it seems to me that American agriculture is going to be confronted with the problem of excess acres. But with this problem of excess acres being worked on through soil conservation and other agricultural programs, and foreign markets being gradually opened up through a sound foreign trade policy, I think there is every reason to expect that we will arrive at a solution which will represent real gains to agriculture and to the general welfare.

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## GERMANY'S CAPACITY TO PRODUCE AGRICULTURAL PRODUCTS . . . . .

. . . By N. Jasny\*

Germany was at one time the second largest importer of American agricultural products. In recent years, however, imports of agricultural products in general, and from the United States in particular, have been greatly reduced, and Germany has undertaken a program designed to attain agricultural self-sufficiency. Many phases of the program seem to involve excessively high-cost factors, but the German Government justifies these on the basis of national necessity. This article traces the long-time development of German agriculture, and an attempt is made to appraise the productive capacity of the agricultural plant. The point is brought out that German natural conditions are best adapted to the production of carbohydrates, such as small grains and potatoes, but poorly adapted to the production of proteins and fats. A further increase in production can be expected if the present policy is continued, but it does not appear that Germany will be able to achieve the degree of self-sufficiency desired.

Only a few years ago Germany was considered to be an industrial country which had to rely on imports for a considerable part of its agricultural requirements. Nearly 100,000,000 bushels of bread grains, a still greater amount of feed grains, some 2,000,000 short tons of oil cake, more than 1,000,000 tons of various oils and fats (vegetable oils, whale oil, butter, lard), large quantities of eggs, vegetables, and fruits, as well as cotton, wool, tobacco, etc., had to be imported annually.

A great change has taken place in recent years. In 1933-34, Germany was a net exporter of bread grains, and net imports of feed grains were negligible. Nor would there have been any need for substantial net imports of grains in 1934-35 but for the drought in the summer of 1934. Less drastic, yet significant, changes have also occurred with regard to many other agricultural commodities. In fact, total imports into Germany of such agricultural products as are adapted to the Temperate Zone were cut in half during the period from 1927 to 1934.

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\*This study was made by Dr. Jasny, formerly Senior Economist with the Agricultural Adjustment Administration. It was prepared for publication by D. F. Christy, Senior Agricultural Economist, Bureau of Agricultural Economics.

The forces which brought about this surprising result must, of course, be sought in the development of domestic production and consumption. Germany has revealed an unexpected ability to expand agricultural production. Its increase in consumption, on the other hand, has been retarded during all the post-war years by a marked decline in the rate of population growth. An expansion in population, rather than an increase in per-capita consumption, is usually the main stimulant in the development of total consumption. During the recent depression, the advance in per-capita consumption was not only checked but finally even reversed.

The great increase in Germany's self-sufficiency is significant from the standpoint of world trade in agricultural products and affects directly and indirectly world agriculture in general. This is especially true when it is considered that for a long time Germany was the world's second largest importer of agricultural products as a whole and of such individual items as grains, butter, cheese, lard, eggs, and the so-called tropical fruits. Germany held first place as an importer of vegetable oils (mainly in the form of oilseeds) and their substitutes, the fish oils and oil cakes.

Exports from the United States to Germany during the past few years have consisted primarily of those commodities which are not produced at all in Germany, such as cotton, or of those produced in small quantities only, such as tobacco. Lard, wheat, and fruits are the only products normally exported from the United States to Germany in sufficient quantities to be directly affected by the increase in Germany's agricultural production. The American cotton market, however, is affected by Germany's efforts to substitute rayon yarn and rayon fiber for cotton, and American agriculture as a whole is vitally concerned with developments in Germany insofar as the latter affect the agricultural situation of the entire world.

Because of Germany's position in international trade, it is important for the United States, and the world at large, to know whether or not the present trend of developments in Germany will continue. The future of Germany's agricultural production, consumption, and foreign trade depends, however, upon so many factors that forecasts are very difficult. A most significant and at the same time a very uncertain factor in the outlook for the future is the general economic situation of the world. If world economic conditions continue to improve, Germany may no longer feel that it is necessary to produce everything possible at home without regard to cost. In 1933 and 1934, the German Government considered it reasonable to produce neutral lard at a cost of about 44 cents per pound (at the current rate of exchange) for use in the manufacture of margarine, instead of utilizing such materials as whale oil costing about 3 cents per pound, or coconut oil at 4 cents. Although this production has been discontinued, it was not from consideration of the wastefulness of such a policy. Preference is given to high-priced domestic alcohol rather than to cheap imported gasoline. Consumption of domestically produced artificial fiber,

expensive and poor in quality, is pushed rather than that of imported fibers. As long as such practices last, it is impossible to foresee what other imports of agricultural products Germany may displace in the future. Even if the consideration of cost should again play some role in Germany's agricultural policy, it would still be difficult to make forecasts because considerations of national defense play such a paramount part and might prevent any modification of the present self-sufficiency program.

Since forecasts are necessarily so uncertain in this case, it seems advisable to concentrate on the clarification of past trends. An appraisal of the developments in production during the post-war period, particularly with regard to the possibility of attaining agricultural self-sufficiency, is the chief objective of this study. Because Germany's agricultural situation at the beginning of that period was to a great extent preconditioned by the development in pre-war times, a summary treatment of the pre-war period is also included. Discussion is restricted to the analysis of those products which are important in Germany's agricultural production. Other products are considered only insofar as they are related to attempts made to lessen Germany's dependence upon foreign countries for supplies. It is necessary, however, at the outset to devote some attention to general factors affecting Germany's capacity to produce farm products.

#### Factors Affecting Germany's Agricultural Production

##### Country densely populated

Germany has a total area of 115,707,000 acres, excluding the Saar, of which 70,762,000 acres were used for agricultural purposes in 1935 (see table 3), 31,853,000 acres were in forests, 1,940,000 acres were used for buildings, and 6,449,000 acres were in roads, recreational grounds, or were covered by water. The unused and unproductive land amounted to only 4,703,000 acres. As Germany is an old, densely populated country, even the poorest lands have been under cultivation for a long time.

In 1933, Germany's population (exclusive of the Saar) averaged 360 persons per square mile as against 344 in Italy (1931), 196 in France (1932), and 214 in Denmark (1930). In Europe, only Great Britain, Belgium, and the Netherlands, are more densely populated than Germany. The United States, in contrast, had in 1930 only 41.3 persons per square mile.

##### Climate and soil limit choice of crops

Germany is situated much farther north than the United States, its position corresponding roughly to that of the agricultural sections of eastern Canada. While the climate is somewhat milder than that of eastern Canada, the average temperature during the growing season is quite similar, and is considerably lower than that prevailing in the main agricultural

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areas of the State of New York. As to the length of the vegetation period, it must be remembered that, under the intensive system of agriculture which a country so densely populated as Germany is compelled to practice, a greater proportion of the growing period is needed for soil preparation than under the extensive method employed in eastern Canada. Roots and tubers, in particular, require a longer period for growth and harvest. More time is also necessary because the land is not fallowed as in an intensive system of agriculture.

The annual precipitation for Germany as a whole averages 24 inches. From May through July, rainfall varies from less than 6.4 to over 16 inches, most of the country receiving between 7 and 12 inches. Because of the rather low evaporation resulting from the relatively cool climate and small number of sunshiny days, precipitation is sufficient in many parts of the country for an intensive system of agriculture. The eastern sections get the least rain, and the light soils there, which require frequent rains, often suffer from lack of moisture. Precipitation during August-September is rather high for the country as a whole. This favors root crops and potatoes but is often damaging to the grain harvest.

American agricultural experts visiting Germany are usually impressed by the density and height of the crops in the fields. The absence of weeds indicates to them the thoroughness with which German farmers cultivate their land. They are apt to think, however, that thoroughness alone could hardly produce such crops, and they begin to doubt the unanimous contention of all German agricultural experts that only in a few other countries is the proportion of poor soil to the total arable land as large as it is in Germany. And yet the contention is true, even now, after Germany's soil has been greatly improved by drainage, thorough cultivation, and lavish application of manure and artificial fertilizers.

As shown in figure 1, cleared brown forest soils predominate in Germany. All these soils are more or less leached and are therefore lacking in carbonates and other readily soluble salts. They also contain only a small percentage of phosphoric acid and nitrogen and have a more or less acid reaction, all of which makes them unfavorable for most crops. The comparable soils in the United States are those of Pennsylvania and Maryland and the light soils of Ohio and Indiana. With the exception of parts of Silesia and East Prussia, and some other minor tracts, all the soil of eastern Germany (east of the Elbe River) consists of the particularly light-colored type, slightly to moderately leached. The north-western and part of the western regions have the same type of soil, although it is on the average a little darker in color and to a rather large extent badly leached.

The soils in the south are also rather deficient in plant food, and to this disadvantage is added a rolling and hilly topography. A

report of the investigations of Professor Munzinger 1/ in the State of Württemberg provides a striking picture of the toilsome work of the peasants, their wives, and their children, particularly in view of the poor reward earned for it. Similar conditions are typical of many parts of southern Germany, and may be found in mountainous sections of other parts of the country as well. 2/ There are in fact only a few small areas of really good soils (partly chernosem) in Germany, the largest extending over about 1,500 square miles. The situation is rendered even less favorable by the fact that the intensive system of agriculture makes light soils even less valuable.

Of the total area used for agricultural purposes in Germany, 60 percent consists of light soil. 3/ Since a light soil is at a greater disadvantage in a cold than in a warm climate, Germany is doubly handicapped. There are but few crops which can withstand cold and at the same time flourish in a light soil. Some lands can produce only rye and lupines. The latter crops are usually plowed under for the succeeding rye crop, which, because of the short season, is harvested every other year. The soil requires heavy applications of fertilizers, in addition to the lupines plowed under; consequently, the cost of producing rye is extremely high. Some of the soils will produce oats and potatoes, as well as rye; lupines also will grow but no other legumes, either dry or for hay. Potatoes are usually the only row crop grown on light soils, because the moisture supply is insufficient for feed roots, such as turnips and carrots. A large percentage of roots is essential for the success of the intensive system of agriculture, but only a little more than 25 percent of the German plowland 4/ is suitable for these crops.

Both climate and soil are rather unfavorable for the production of high protein crops, of which there is a great deficiency, but German conditions are even more unfavorable for the production of fats. Carbohydrates, on the other hand, are relatively the most favored, and attention is largely concentrated upon them. Moreover, some products consisting mainly of carbohydrates, such as sugar beets and wheat, are extensively grown on the limited areas equally suitable for other products. Of other crops supplying carbohydrates, grains occupy a greater

1/ *Der Arbeitsertrag der bäuerlichen Familienwirtschaft*, Berlin, 1929.

2/ See F. Beckmann, "Die Notlage der Bauernwirtschaften in den westdeutschen Höhengebieten", pp. 308 to 330, in M. Sering, *Die deutsche Landwirtschaft*, Berlin, 1932; and C. Dietze, "Die Lage der Landwirtschaft in ungünstigen Gebieten Mitteldeutschlands", pp. 330 to 341 of the same publication.

3/ "Die Kultur des deutschen Bodens" in the publication *Deutschland, die natürlichen Grundlagen seiner Kultur*, Leipzig, 1928, quoted from E. Borsig, *Reagrarisierung Deutschlands?* Jena, 1934, p. 9.

4/ The expression "plowland" is used for the German "Ackerland." It differs from the expression "crop land" in that it includes fallow land and sown grasses used for pasture. It does not include wild hay.

proportion of the total cultivated area than is usual in other countries with a similar system of agriculture. Even here Germany is restricted, however, by natural conditions, because rye is more favored than wheat, oats than barley. For decades, Germany's bread-grain production was characterized by an excess of rye, while there was a large deficiency of wheat. For a long time, also, there was a surplus of oats, whereas barley was imported in large quantities. In 1936, however, 6,848,000 acres were devoted to oats and only 2,955,000 acres to summer barley. Although the cultivation of rye and oats, instead of wheat and barley, was due primarily to soil conditions, the choice of rye was also necessitated in some sections by the shortness of the season.

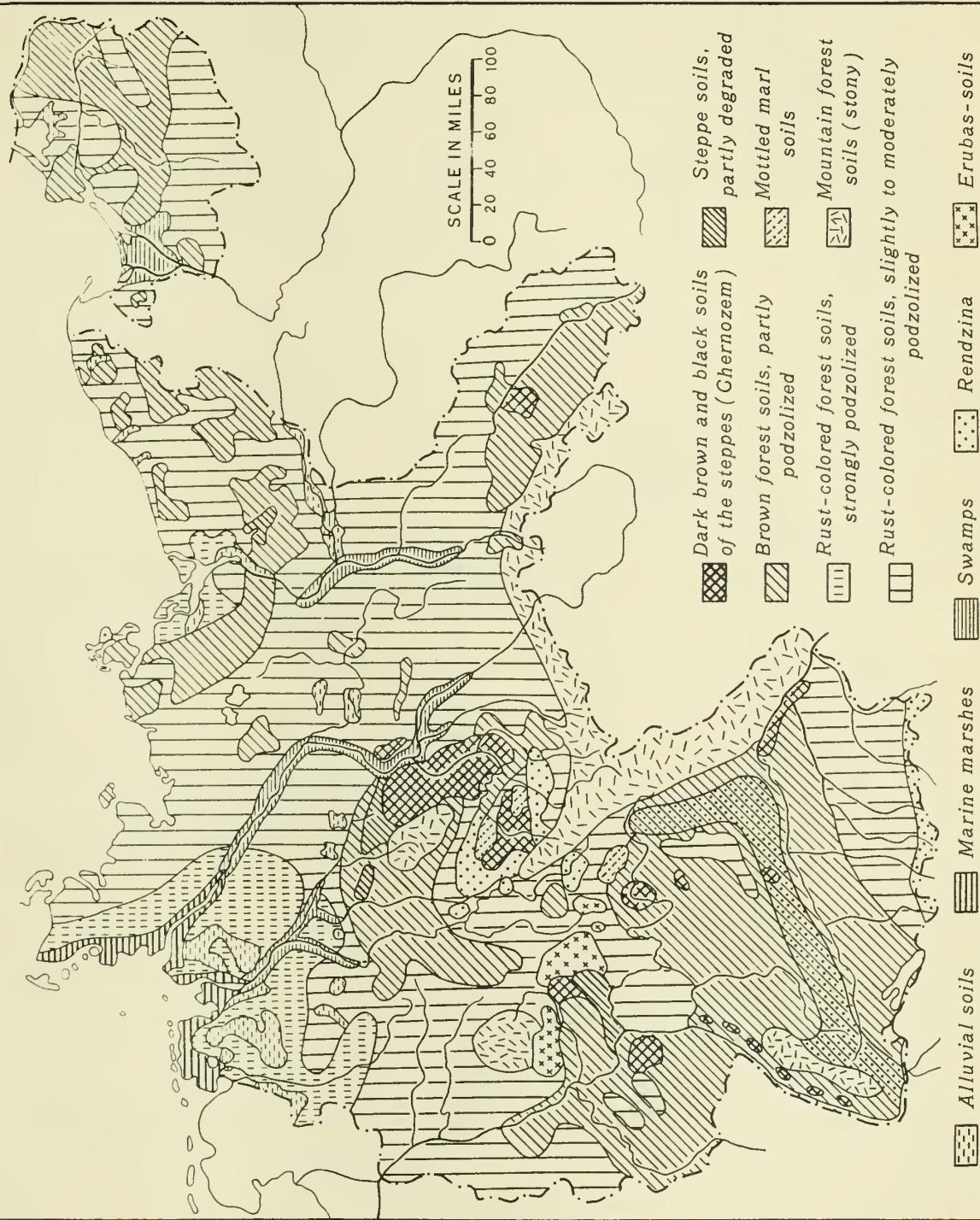
In 1935, more than 60 percent of the total plowland of Germany was in grain (see table 3). The potato acreage amounted to 14.2 percent. Thus, grain and potatoes, which under German conditions are closely connected, accounted for more than 74 percent of the total plowland. Roots (not including vegetables) represented 7.9 percent. Root crops used for feed occupied 5.9 percent, a rather small percentage as compared with other countries of similar agricultural conditions. In Denmark, for example, about 14 percent of the cropped plowland was in feed roots in 1932. Clover, for which about half of the German soils are suitable, was sown on 7.6 percent of the total plowland. Only about one-sixth of the acreage in sown grasses was devoted to alfalfa. In 1935, 82.6 percent of the total plowland was occupied by crops which are primarily or exclusively sources of carbohydrates. Allowing 2.4 percent for fallow land, only 15.0 percent remains for all other crops. The significance of these figures becomes more noteworthy in view of the fact that natural meadows and pastures also are largely carbohydrate producers.

Yields per acre are high in Germany, especially when the quality of the soil is considered. The reasons, great thoroughness of land preparation and large applications of manure and artificial fertilizers, have been indicated. Also, great amounts of power and labor are used. As shown in an account for a very large estate in the Province of Brandenburg, during 1928-1929, an average of not less than 60 horse hours and 35 man hours were used per acre of winter wheat up to, but not including, the harvest.<sup>5/</sup> To these figures must be added the substantial amounts of power and labor used in handling manure, which cannot reasonably be charged to the livestock account. According to a survey in central Indiana, only 2.6 horse hours, 0.6 tractor hours, and 2.0 man hours were used per acre to produce, but not to harvest, winter wheat on farms many times smaller than the German estate. <sup>6/</sup>

5/ A. Peters and R. Tismer, *Arbeitsverfahren und Arbeitsleistungen in der Landwirtschaft*, 1 Teil, Berlin, 1930, pp. 296-297.

6/ Labor and power used in crop production in Central Indiana, Purdue University Agricultural Experiment Station, Bull. 378, 1933, p. 14.

## TYPES OF SOILS IN GERMANY



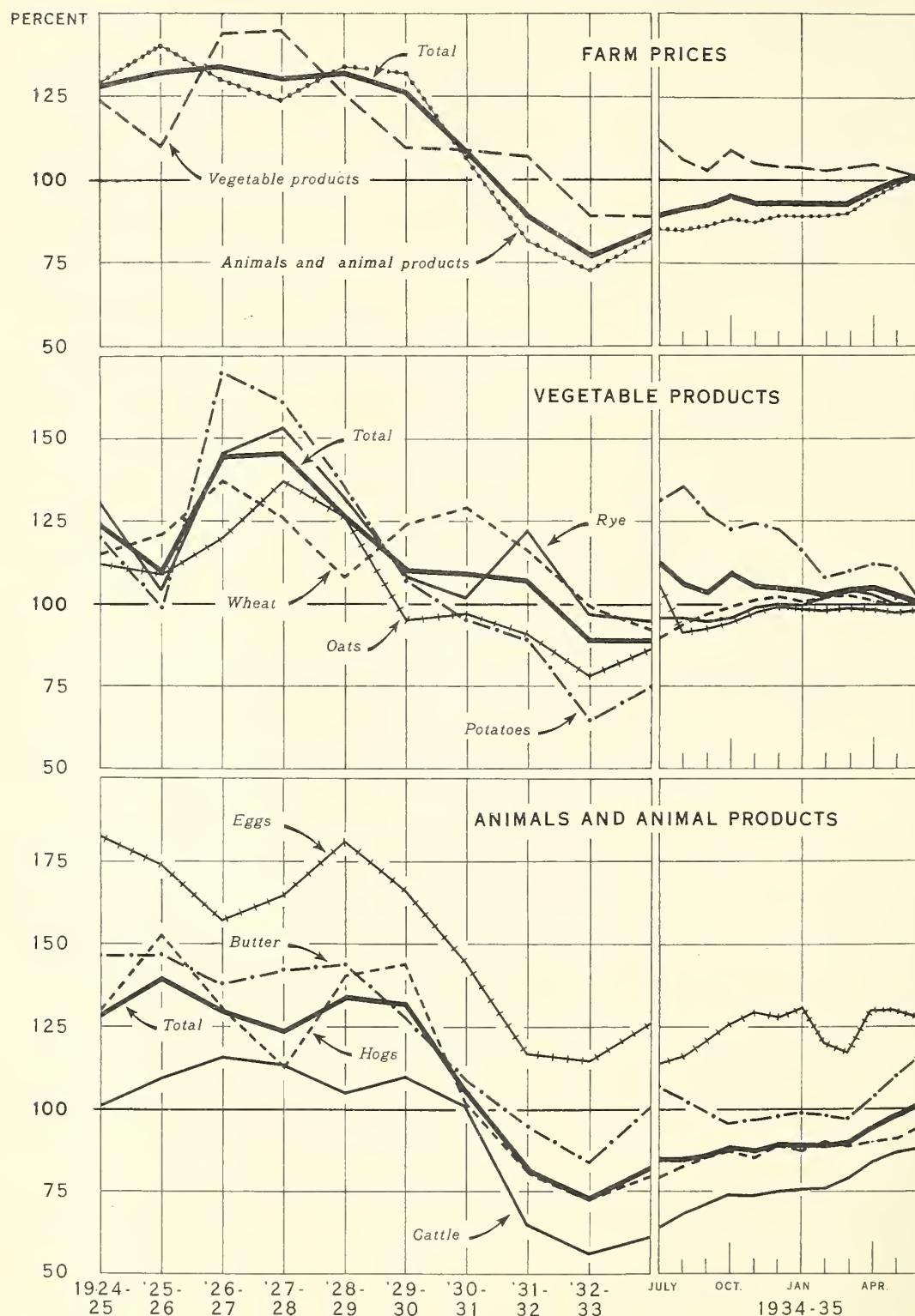
U. S. DEPARTMENT OF AGRICULTURE

NEG. 29066 BUREAU OF AGRICULTURAL ECONOMICS

FIGURE 1

**GERMANY: INDEXES OF FARM PRICES,  
1924-25 TO 1934-35**

1909-10-1913-14=100



**FIGURE 2**

Table 1. Utilization of artificial fertilizers per acre of agricultural land in specified countries, 1928  
(Plant-food basis)

Country	Nitrates	Phosphates	Potash
	Pounds	Pounds	Pounds
Germany .....	12.4	14.9	23.4
Austria .....	.9	3.8	4.8
Netherlands .....	23.5	46.6	36.9
Belgium .....	17.2	30.8	18.3
France .....	3.6	12.6	4.5
Spain a/ .....	2.1	7.1	1.8
Italy a/ .....	3.4	17.2	1.7
Switzerland .....	3.2	8.0	1.9
Finland .....	.6	5.7	3.3
Sweden a/ .....	1.9	5.7	4.2
Norway a/ .....	1.6	5.4	4.9
British Isles .....	2.0	6.4	1.8
Denmark .....	7.8	18.0	4.9
Poland .....	1.2	2.9	2.6
Czechoslovakia .....	3.8	7.6	3.4
United States b/ .....	2.0	4.4	1.9
Canada a/ .....	.2	.6	.8
Japan .....	17.1	16.8	3.8
Egypt .....	1.4	.3	-
Algeria .....	.2	.1	.5
Ceylon .....	2.1	1.0	2.9

Source: Die Ernährung der Pflanze, No. 13, 1930, p. 311.

a/ Agricultural area, excluding meadows and pastures.

b/ Crop acreage.

Only in Belgium and the Netherlands, the countries of the most intensive agriculture in the world, is more fertilizer used than in Germany. Furthermore, Belgium and the Netherlands grow a much larger proportion of root crops and potatoes, which require a great deal of fertilizer. For Japan, the figures for nitrates and phosphates are higher than for Germany; but in that country only a small proportion of the agricultural area is in meadows and pastures, for which relatively small applications of artificial fertilizers are needed. The utilization of artificial fertilizers in Germany, therefore, ranks still higher than can be assumed from a numerical tabulation. The expenditures for artificial fertilizers amounted to some 723,000,000 Reichsmarks (about \$289,000,000) in 1935-36, or a little more than 8 percent of the total cash receipts of agriculture. Thus, in spite of high yields per acre and low wages, Germany unquestionably should be classified with the countries having a high unit cost of production.

Table 2. Utilization of agricultural land, 1893, 1900, and 1913  
(Pre-war boundaries)

Item	Acreage			Percentage of plowland			Percentage of agricultural land		
	1893	1900	1913	1893	1900	1913	1893	1900	1913
Rye .....	1,000	1,000	1,000	Per-	Per-	Per-	Per-	Per-	Per-
acres	acres	acres	cent	cent	cent	cent	cent	cent	cent
Rye .....	14,868	14,781	16,113	23.3	23.2	25.5	17.1	17.0	18.7
Wheat, inc. spelt..	5,926	5,866	5,564	9.3	9.2	8.8	6.8	6.8	6.5
Barley.....	4,021	4,217	4,227	6.3	6.6	6.7	4.6	4.9	4.9
Oats.....	9,651	10,143	10,985	15.2	15.9	17.4	11.1	11.7	12.8
Mixed grain .....	792	863	920	1.3	1.4	1.5	.9	1.0	1.1
Corn .....	151	136	130	.2	.2	.2	.2	.2	.1
Buckwheat .....	438	298	105	.7	.5	.2	.5	.3	.1
Total grain .....	35,847	36,304	38,044	56.3	57.0	60.3	41.2	41.9	44.2
Peas .....	869	631	334	1.4	1.0	.5	1.0	.7	.4
Beans .....	24	20	14	-	-	-	-	-	-
Beans (feed) .....	404	378	240	.6	.6	.4	.5	.4	.3
Vetch .....	664	593	469	1.1	.9	.7	.8	.7	.5
Lupines .....	899	853	420	1.4	1.4	.7	1.0	1.0	.5
Mixed dry legumes..	-	-	-	-	-	-	-	-	-
Total dry legumes <sup>a/</sup>	2,860	2,475	1,477	4.5	3.9	2.3	3.3	2.8	1.7
Mixed grain and									
dry legumes .....	810	885	635	1.3	1.4	1.0	.9	1.0	.7
Potatoes .....	7,505	8,011	8,586	11.8	12.6	13.6	8.6	9.2	10.0
Sugar beets.....	b/	977	1,178	1,442	1.5	1.8	2.3	1.1	1.4
Other roots .....	-	-	2,315	-	-	3.7	-	-	2.7
Total tubers									
and roots .....	-	-	12,343	-	-	19.6	-	-	14.4
Vegetables .....	-	-	317	-	-	.5	-	-	.4
Rape .....	262	180	81	.4	.3	.1	.3	.2	.1
Flax .....	151	83	41	.2	.1	.1	.2	.1	-
Other ind. plants	233	201	155	.4	.3	.2	.3	.2	.2
Clover .....	4,312	4,499	4,510	6.8	7.1	7.1	5.0	5.2	5.2
Alfalfa .....	515	559	616	.8	.9	1.0	.6	.7	.7
Other sown grasses.	1,398	1,507	1,435	2.2	2.3	2.3	1.6	1.7	1.7
Total sown grasses	6,225	6,565	6,561	9.8	10.3	10.4	7.2	7.6	7.6
Fallow .....	6,821	5,648	3,412	10.7	8.9	5.4	7.8	6.5	4.0
Total plowland ...	63,679	63,689	63,066	100.0	100.0	100.0	73.3	73.5	73.3
Natural meadows ...	14,618	14,717	14,806				16.8	17.0	17.2
Natural pastures...	7,099	6,688	6,406				8.2	7.7	7.5
Orchards .....	-	-	128				-	-	.1
Vineyards .....	328	334	293				.4	.4	.3
Garden lands .....	1,168	1,193	1,326				1.3	1.4	1.6
Total agricultural									
land.....	86,892	86,622	86,025				100.0	100.0	100.0

Official data. Some items reported in 1913 not given for 1893 and 1900, so "total plowland" is a converted not an added total. <sup>a/</sup> A considerable part of vetch, lupines, and mixed legumes are not harvested for grain but are plowed under, etc. <sup>b/</sup> Does not include acreage used for growing beets for seed.

Table 3. Utilization of agricultural land, 1913, 1927, and 1935  
(Post-war boundaries excluding the Saar)

Item	Acreage			Percentage of plowland			Percentage of agricultural land		
	1913	1927	1935	1913	1927	1935	1913	1927	1935
	acres	acres	acres	Percent	Percent	Percent	Percent	Percent	Percent
Rye .....	1,000	1,000	1,000	Per-	Per-	Per-	Per-	Per-	Per-
	acres	acres	acres	cent	cent	cent	cent	cent	cent
Rye .....	13,170	11,666	11,218	24.8	22.7	23.5	17.9	16.0	15.9
Wheat, inc. spelt..	4,809	4,633	5,384	9.1	9.1	11.3	6.6	6.4	7.6
Barley .....	3,538	3,679	3,965	6.7	7.2	8.3	4.8	5.1	5.6
Oats .....	9,709	8,614	6,892	18.3	16.8	14.4	13.2	11.8	9.7
Mixed grain .....	736	949	1,288	1.4	1.9	2.7	1.0	1.3	1.8
Corn .....	104	57	177	.2	.1	.4	.1	.1	.3
Buckwheat .....	94	52	23	.2	.1	-	.1	.1	-
Total grain .....	32,160	29,650	28,947	60.7	57.9	60.6	43.7	40.8	40.9
Peas .....	242	237	121	.5	.5	.3	.3	.3	.2
Beans .....	)	20	12	-	-	-	-	-	-
Beans (feed) .....	)	240	195	.5	.4	.2	.3	.3	.2
Vetch .....	373	358	299	.7	.7	.6	.5	.5	.4
Lupines .....	326	408	309	.6	.8	.7	.4	.6	.4
Mixed dry legumes..	54	203	106	.1	.4	.2	.1	.3	.2
Total dry legumes <sup>a</sup>	1,236	1,421	956	2.4	2.8	2.0	1.6	2.0	1.4
Mixed grain and									
dry legumes .....	499	489	383	.9	1.0	.8	.7	.7	.5
Potatoes .....	7,023	6,953	6,796	13.2	13.6	14.2	9.6	9.6	9.6
Sugar beets .....	1,181	1,119	960	2.2	2.2	2.0	1.6	1.5	1.4
Other roots .....	1,989	2,513	2,793	3.7	4.9	5.9	2.7	3.4	3.9
Total tubers									
and roots .....	10,193	10,586	10,549	19.1	20.7	22.1	13.9	14.5	14.9
Vegetables .....	287	339	331	.5	.7	.7	.4	.5	.5
Rape .....	74	69	116	.1	.1	.2	.1	.1	.2
Flax .....	37	37	55	.1	.1	.1	.1	.1	.1
Other ind. plants..	133	114	106	.2	.2	.2	.2	.2	.1
Clover .....	)	4,482	3,633	)	8.8	7.6	)	6.2	5.1
Alfalfa .....	)	5,619	699	897	10.6	1.4	1.9	7.6	1.0
Other sown grasses..	)		754	657	)	1.5	1.4	)	1.0
Total sown grasses	5,619	5,935	5,187	10.6	11.7	10.9	7.6	8.2	7.3
Fallow .....	2,849	2,431	1,159	5.4	4.8	2.4	3.9	3.4	1.6
Total plowland ...	53,092	51,120	47,789	100.0	100.0	100.0	73.2	70.5	67.5
Natural meadows ...	13,188	13,623	13,894				18.0	18.6	19.6
Natural pastures ..	5,664	6,205	7,186				7.7	8.5	10.2
Orchards .....	121	119	252				.2	.2	.4
Vineyards .....	222	198	200				.3	.3	.3
Garden lands .....	1,176	1,406	1,441				1.6	1.9	2.0
Total agricultural									
land.....	73,463	72,670	70,762				100.0	100.0	100.0

Official data.

<sup>a/</sup> A considerable part of vetch, lupines, and mixed legumes are not harvested for grain, but are plowed under, etc.

Ports and industrial centers influence type of agriculture

Apart from soil and climate, the character of Germany's agricultural production is determined to some extent by the location of its industrial activities. Since these are concentrated in the west, western agriculture specializes in the production of milk and in growing vegetables and fruit, which are also favored by the climate. Likewise, in the recent past import markets exerted considerable influence on agricultural pursuits, because overseas feedstuffs are more easily secured in their vicinity. The large harbors, such as Hamburg and Bremen, are found in northwestern Germany; therefore, this is the most appropriate section for converting imported feeds into animal products. Grass grows well for pasture and the distance to the industrial centers of the west is comparatively short. Agriculture in eastern Germany, which is sparsely populated and has a climate more continental in character, is largely confined to the production of rye, oats, potatoes, hogs (fed on potatoes and rye), and cattle.

Agricultural policy an important influence

In addition to the physical factors affecting production, the agricultural output has been influenced to a high degree by governmental policies. The policy long was very one-sided but recently became more balanced with higher and higher protection extended to more and more products.

Germany's density of population, poor quality of soil, great resources of coal and other minerals, and high efficiency in industrial pursuits favor a concentration on industrial production. Some German economists, therefore, have thought that England's way should be Germany's also. Yet, most economic authorities have believed that the marked difference in the geographical position of the two countries could not be disregarded in making plans for the future. Two main considerations have always been stressed in this connection. First, it has been assumed that it would be much easier in the case of war to cut off Germany than Great Britain from world supplies of food. Most people have believed that it would be dangerous, therefore, to have industry developed to such an extent that a great part of the population would be dependent upon imported food.

The second consideration is based on the belief that a great diminution in the agricultural population of eastern Germany would be equivalent to a depopulation of that part of the country, always thought to be most endangered in case of conflict. Although population growth in eastern Germany is not now considered important by some military authorities from a strategic point of view, it is assumed by many people that it would keep Germany's eastern neighbors from becoming greedy for this land. For this reason, national defense has always been effectively used in arguments for increasing the population of the east by supporting the prices of its agricultural products and by rural resettlement. E. Salin writes in Deutsche

Agrarpolitik in Rahmen der inneren und äusseren Wirtschaftspolitik: "Any one, observing the borders of East Prussia and of Rump Silesia and wanting to resist a fiendish encroachment, must be aware that only a living dam may retain the endangered land for the German people through all vicissitudes of possible wars." 7/

Aside from these considerations, an unlimited decrease in the proportion of the agricultural population was considered undesirable by many from a social and particularly from a national point of view. When the birth rate declined to the point of endangering population growth in the country as a whole, the higher birth rate among the agricultural inhabitants became a factor that was stressed in favor of maintaining the highest possible proportion of agricultural population.

With the advent of the National Socialist regime, the idea of strengthening the Nordic race was advanced with great energy. Because the peasant is considered the most undiluted representative of this race, the support of agriculture, without regard to its profitability, was proclaimed the primary aim of Germany's Government and people. "Blood and Soil" became the slogan. 8/

In general an agro-industrial state has seemed preferable to a purely industrial one. There have been, however, great variations in the extent to which protection of agriculture was stressed. When business conditions in the world favored an expansion of Germany's industrial production and exports, the idea of balancing industry and agriculture dropped more or less into the background. On the other hand, when general business conditions became unfavorable for Germany's industrial exports, the danger of an industrial overexpansion was emphasized again and again. Thus, the interests of agriculture have conflicted with those of the export industries, and they have become the main adversaries in the fight for or against protection for agriculture.

The idea of an agro-industrial state having been generally accepted, Germany has never entirely abolished the protection of its agricultural production, except for the emergency period of the war and that of the post-war inflation years. The industrial population did not, however, keep within the limits which would correspond to that idea, and by 1925 only 23 percent of the population was gainfully occupied in agriculture. The protective measures undertaken before the National Socialist regime

7/ Deutsche Agrarpolitik, report prepared by the Friedrich List Gesellschaft, Berlin, 1933, Vol. II, p. 715.

8/ See A. Hitler, Mein Kampf, Berlin, several editions, as well as his speech at the meeting of the Deutscher Landwirtschaftsrat, 1933, in Berlin in Die Regierung der nationalen Erhebung und die Landwirtschaft, Berlin, 1933, pp. 8-9. These ideas are developed in greater detail by W. Darré in Das Bauerntum als Lebensquell der nordischen Rasse, 2nd edition, München, 1933, Neuadel aus Blut und Boden, 1930, etc.

succeeded only in making Germany self-sufficient in a few foodstuffs. At the second National Peasants' Day at Goslar in November 1934, the Minister of Agriculture, W. Darre, speaking as the peasants' leader, asserted: "In the days of the Empire and more especially between 1918 and 1933, it was imagined in Germany that food sources could be established abroad and that no independent domestic food organization was necessary." A production drive (*Erzeugungsschlacht*) was launched by the present Government in 1934 to make sure that the food supply could be obtained from German soil. The aims of the "drive" were specified in Goslar by the National Commissioner for regulating fruits, vegetables, and potatoes as follows: "We do not wish to organize our economy so as to cut off every communication with foreign countries. But some definite, absolutely necessary nucleus of requirements must be insured within the country on a scale large enough to allow us to do without any imports in case of necessity. In excess of the above quantities we are willing to import goods to the extent that they improve and enhance the standard of living."

Pre-war policy favors eastern estate owners: The landlords of the large eastern estates have had a traditional interest in prices of rye, oats, potatoes, and beef. To meet their demands, high import duties were placed on rye and oats as early as the middle of the eighties. In order to support rye prices, as well as to give compensation to the producers in other sections of the country, wheat was also protected by a rather high import duty. Although import requirements for wheat were much higher than for rye and oats at the time the last pre-war duties were levied (1902), the import duty placed on wheat was relatively lower than that on rye or oats. The effectiveness of the protection was assured by a system of export certificates under which domestic prices exceeded world prices by the amount of the import duty even when production exceeded domestic requirements. The importation of meat was almost prohibited by sanitary regulations. These were applied not only to cattle but to hogs also, in order to uphold the prices of potatoes as well as of cattle. Potatoes produced by the landlords also came under the monopolistic regulation of alcohol production that gave great advantages to large estates owning distilleries. Landlords who occupied most of the better soils were also favored by high import duties and high export bounties on sugar.

Duties on other important commodities, produced largely by peasants, were low. The duty on butter amounted to less than 10 percent and that on eggs to only about 2.5 percent of the world price. The duty on lard was about 5 percent of the world price, while oilseeds, the main raw materials for margarine production, were admitted duty free. As margarine, together with lard, gradually became the principal source of fat in the German diet, milk producers would not have gained much even if butter had been protected by a high duty. But to offset to some extent the lack of protection afforded milk production, such important concentrates as oil cakes, bran, and similar feeds, remained duty free. For the sake of those pork producers who had to buy their feed, the duty on

corn just prior to the war was equivalent to only 60 percent of the duty on oats; and on feeding barley, the principal grain fed to hogs in Germany, it was considerably less. Fish meal, a valuable protein supplement widely used for feeding hogs, was duty free. As there was no thought of placing an import duty on any agricultural product used as a raw material in industrial production, oils and fats, as well as fibers, for such purposes were duty free. This resulted in a decline in the domestic production of flax, wool, and oilseeds.

Although the interests of the eastern landlords were given most consideration, the peasants of the east had no reason for complaint. Furthermore, with the rapid advance of consumer demand in the last pre-war years, the free admission of protein feeds for cows and hogs and the low duty on barley constituted a rather satisfactory arrangement for both the small and the large producers of northwestern Germany.

If German agricultural products are classified according to the three main food groups, it will be observed that the pre-war policy concentrated on protecting the domestic production of the carbohydrates, which were also favored by natural conditions. This may have been reasonable, in view of the fact that natural conditions are not favorable for the production of proteins and are still less so for fats, and that it was believed to be harmful to the exporting industry to protect all agricultural products. But the policy was too one-sided. Immediately before the World War, Germany was the largest net exporter of rye and was fast becoming a large net exporter of oats. Too much emphasis upon the production of only one of the chief ingredients of human and animal food also could not fail to place a hardship on the whole country in time of war.

The problem of national defense was more or less disregarded by the pre-war agricultural policy in other respects as well. It is true that the agriculture of the east was protected much more effectively than that of other parts of the country, but it was the large owners who received the greatest benefit. The splitting up of large farms into small ones was not generally favored, although the density of the population in the same sections was about 50 percent greater on peasant farms than on large estates. Only 44,000 farms were created through State assistance from the beginning of the settlement activity in the eighties to 1915. Moreover, the employment of foreigners as seasonal farm help encouraged the migration of the rural population away from the east into the western cities and industrial districts. The foreign workers came from that part of Poland then belonging to Russia and, because of the conditions under which they were hired, could only be used by the large estates. It is estimated that in some years as many as 400,000 Polish workers were thus employed on German farms before the World War. This, of course, did not conform with the idea of a large native population in eastern Germany, which was advocated for defense purposes.

Post-war policy leads to complete protection: In 1925, Germany believed it possible to return to a protective policy toward agricultural production. In spite of the war experience, this again developed along pre-war lines. Rye became the most highly protected product, and for a time a similar support was accorded oats. The aid granted to wheat, although considerable, was proportionately lower. Again feed grains were only moderately protected. Butter, eggs, vegetable oils, etc., were treated in a manner similar to the pre-war practice. The duties on livestock and meat were fixed at higher levels than before the war, but the sanitary regulations, which were more significant in pre-war protection than were import duties, were not reintroduced until July 1, 1930. Before that time, frozen meat was even allowed to enter the country free of duty.

The results obtained under this one-sided policy proved it untenable much more rapidly than before the war, because the situation to which the policy was applied differed considerably from the one prevailing before the war. At that time, with total consumption rapidly increasing and producers only moderately eager to take advantage of favorable business conditions, it took two decades to disclose the inevitable consequences of unbalanced protection. Under post-war conditions, the same result was brought about within a couple of years, during which demand increased at a relatively slow rate, and shifts from products with less favorable prices to those of higher returns took place more rapidly. As early as 1927-28, Germany's exports of oats exceeded imports, and in the next year large surpluses of both oats and rye had accumulated. Imports of butter, which were at the pre-war level as early as 1924, doubled in the course of the next 3 years and subsequently increased still further. Imports of eggs in 1928 exceeded the highest imports of pre-war years. Although imports of feeds also increased rapidly, imports of feed grains soon reached their peak, which was considerably under the figures of the last pre-war years. This was the most significant development of the early part of the post-inflation years that was not in accord with trends in the pre-war years, when imports of all feeds, feed grains included, tended to increase indefinitely. It was the forerunner of many later developments.

The relative price situation of each of the major agricultural products from 1924-25 to 1934-35 is shown in figure 2. In using these data, the rather abnormal price relationship of the base years must be taken into consideration. Rye prices were then too high; but, even so, both in 1926-27 and 1927-28, when supplies from the abundant harvest of 1925 were exhausted, the indexes of rye prices as based on pre-war years were considerably above the general price level of agricultural products. In 1928-29, a year with a very large rye crop, the index of rye prices was still equal to the general level. The indexes of oat prices for the first years after the reintroduction of import duties, although considerably under those of rye, were not really low if compared with the indexes of all agricultural products, especially when it is considered that the

prices of this grain during the base period had also created an excess production. From 1926-27 to 1928-29, prices of oats averaged relatively higher than did those of wheat, for which, at that time, a large import requirement existed. Wheat prices were still lower in relation to rye prices, and beef prices were lowest. If the high price level of the base period is considered, however, the situation appears considerably less unfavorable for beef production, and hog prices up to and including 1929-30 appear satisfactory. Butter prices, on the other hand, were only moderate and egg prices not nearly so high as indicated by the indexes.

The surplus of both rye and oats began to accumulate just at the time when the unprecedented collapse of grain prices took place on the world market. Hence, it became particularly difficult to keep domestic prices at the desired level. Yet the Government did not retreat. While it was prepared to make some sacrifices with regard to oats, rye was to be supported at any cost. In 1929-30, when a large crop together with a burdensome carry-over pressed heavily on the market, the "rye battle" started.

In the summer of 1929, import duties on most grains were increased to a level above those in the last pre-war years. In the fall of the same year, a start was also made toward establishing milling quotas for the utilization of domestic wheat. These quotas, which were increased progressively to 97 percent, together with the grain exchange plan, proved a strong instrument for making the import duties on wheat effective. Quotas on rye would not be helpful, so a strenuous effort was made in the fall of 1929 to peg rye prices by Government purchases made on a very large scale. This rye was denatured and sold as feed at a loss to the Government. This effort failed, however, and the Government was compelled to revise once more its methods of protection. While the domestic production of rye and oats was in excess of requirements, Germany was still in need of grain imports. It was thought, therefore, that by a strict rationing or even by discontinuing the import of those grains in which a deficiency still prevailed, the pressure of excessive rye supplies on the domestic market could be prevented and prices maintained at the desired level. The "rye battle" thus became a "grain battle", and a period of rather indefinite increases in import duties on all grains began. Because of certain treaties with foreign producing countries, import duties on corn could not be increased, but a corn monopoly was created by the law of March 26, 1930.

The new policy advocated, on the one hand, a still larger curtailment of wheat imports, in order to induce a shift from rye to wheat acreage. This was also pushed through a vigorous propaganda campaign. On the other hand, as a result of raising the prices of feed grains, rye was used for feed in much greater quantities than before. Extending high protection to all kinds of grain was equivalent to abandoning the firmly established principle of high prices for bread grains (and oats) and low prices for grains fed to hogs. High rye prices were no longer compatible

with low prices for any other grain. Rye could not bear the competition it had withstood for so long before the war. Rye prices can only be maintained on a strictly bread-grain basis without artificial measures in years of small crops when the quantity produced does not exceed the requirements for bread making, together with the poor grain unsuitable for human consumption and those quantities which are used by the small producers for feed purposes regardless of the relation of rye prices to prices of other feeds. When the crop exceeds the above requirements, additional quantities must be fed, in competition with other feeds. The larger the surplus of rye, the more rye prices will deviate from the "bread-grain basis" and approach the "feed-grain basis." Before the war, Germany succeeded in keeping rye prices on a "bread-grain basis", in spite of a large surplus, by exporting it with the aid of export certificates. In post-war years, there were no foreign markets able to absorb such large quantities of rye.

One of the significant consequences of high tariffs on feed grains was the redistribution of livestock production among different parts of the country and among farms of different sizes. Hog production shifted from the northwest, where pork is produced largely on imported feed, to the east, which produces all of its own feed. Furthermore, small farmers who did not produce enough feed for their livestock had to retreat before larger farmers. The number of hogs on farms of less than 12.5 acres increased from 1925 to 1933 by 36 percent, but on farms with 12.5 acres and over the increase was 64 percent. Similar, though not so marked, were the changes in the number of milk cows. It must be borne in mind that livestock raising is a very important occupation on the small farms.

In principle, the new system was nearly as unsound as the old one. Just as the prices of one or two grains cannot be maintained out of relation to the prices of other grains merely by tariff barriers, so the prices of all grains cannot be kept out of relation to the prices of all other agricultural products. Sooner or later the normal price relationship will be restored. Still, through the inclusion of all grains in the protective system, the basis of operations was considerably broadened. In relation to all major agricultural products, rye in 1931-32 commanded the highest prices, and they became more than twice as high as world prices.

Under normal conditions, it might have taken a decade for the new system to prove itself unworkable, but the depression decreased the necessary time to about the same number of months. The reduction in consumption and the great decline in the prices of unprotected feeds as against the stable prices of the supported ones combined to bring about this result. The principle of duty-free importation of bran and mill feed broke down as early as 1930, and in 1932-33 the new system had to be reshaped in its entirety.

National Socialism

The post-war agricultural policy of Germany is sometimes presented in two parts: the first, which deals with the years preceding the National Socialist regime, has just been described; the second deals with the regime itself. There is, in fact, a great deal of difference between these two periods. In the former, the general principle of full competition was accepted, restrictions being applied only where they were believed to be absolutely unavoidable. With some exceptions, these were confined to the regulation of imports and to the subsidizing of exports. The domestic market remained free. The chief exception was made in the case of alcohol, the production of which was based upon quotas and fixed prices long before the war. Following the international agreement on world sugar exports (Chadbourne Plan), the production of beet sugar was organized along similar lines, with quotas extending down to the producers of sugar beets. Finally, the quotas for milling domestic wheat, the regulation of flour extractions, and the admixture of potato starch to wheat bread may be mentioned.

The National Food Corporation: This "liberalistic" system was declared by the National Socialists to be an "immense fraud."<sup>9/</sup> Instead of free competition and free decision, regulation by self-governing corporations, which have a right to enforce their decisions upon recalcitrant minorities and which are supported by Government authority, has become the basis of the nation's economic life. For this purpose, all persons concerned with agriculture (producers, laborers, processors, distributors, and importers) are combined into a National Food Corporation (Reichsnährstand). "The aim of the organization is, on the basis of a fair price for the primary agricultural products, to build up individual processing or marketing stages. Organizations made up of the persons participating in the respective stages are entrusted with responsibility for performance. They have the right to prescribe the grading and the margins for processing and marketing in agreement with organizations of the neighboring stages."<sup>10/</sup>

The organization of the Reichsnährstand extends down to every locality, through provincial, county, and community organizations (Landesbauernschaften, Kreisbauernschaften, Ortsbauernschaften). It comprises several organizations, each of which has to take care of some product or group of products. For example, the organization pertaining to grain includes corporations formed of the producers of grain, the milling industry, the grain and flour trade, and the bakery and macaroni industries.

<sup>9/</sup> Preface by the Minister of Agriculture, W. Darre, to Aufgaben und Aufbau des Reichsnährstandes by H. Reischle and W. Saure, Berlin, 1934, p. 6.

<sup>10/</sup> Reischle and Saure, op. cit., p. 13.

all headed by the German Grain Corporation (Hauptvereinigung der deutschen Getreidewirtschaft). For some products, commissioners of the Reichsnährstand are simply nominated. These organizations and commissioners exert the authority bestowed upon them by the Minister of Agriculture in accordance with powers entrusted to the latter by law. It is intended that these agencies or commissioners be transferred later on to the Reichsnährstand. The Government control over the whole organization is, however, very wide. W. Darré is both Minister of Agriculture and the Reichsbauernführer, or chief of the Reichsnährstand, and it is difficult to distinguish the self-governing organizations of producers from the Government itself.

One of the first measures inaugurated by the National Socialists was the comprehensive Fat Plan, which was placed in operation in the spring of 1933. It was designed to raise the prices of those commodities thrown out of line when all kinds of grain and bran were made expensive. Livestock producers faced with high feed prices had sought refuge in oil cake, which was duty free, and imports of this feed increased from around 1,820,000 short tons in both 1929-30 and 1930-31 to 2,212,000 and 2,868,000 tons in 1931-32 and 1932-33, respectively. The maintenance of high grain prices, however, required that prices of oil cake be brought into line with those of protected grains and feeds. Since the raising of the price of oil cake, the major source of protein feed, would hamper milk production, it had to be accompanied by an increase in butter prices. Yet it was very difficult to raise butter prices without an increase in prices of other fats. Consequently, the prices of all these commodities were raised at one stroke. As to oil cake, an equalization fee was imposed upon it, raising its price to a higher level than that of feed grains.

In 1933-34, Germany harvested a record grain crop. Imports of grain were practically blocked, high import duties existed on most other products, and the Fat Plan was in operation, but this whole chain of protective measures again proved insufficient to sustain grain prices at the desired level. The millers were then ordered to keep in reserve a stock of rye and wheat at least double the quantity of their monthly requirements. By this measure more than 1,000,000 short tons of bread grains (about 6.5 percent of the domestic crop) ceased to be a factor immediately affecting prices. Minimum prices on rye and wheat also were prescribed at a level somewhat lower than average pre-war prices.

For the crop year 1934-35, fixed instead of minimum prices were ordered for grain. The prices fixed for wheat and rye were, on the average, about 7 percent and 4 percent higher, respectively, than the minimum prices for the 1933 crops. Fixed prices were also introduced for wheat and rye flour, feed grains, and mill feed. The prices of oats were about the same as those of the last pre-war years. The prices of feeding barley were necessarily fixed at about the level of rye prices, or around 25 percent higher than the pre-war prices of feeding barley.

It was also thought necessary to advance the import duty on wheat from Rm. 25 to Rm. 35 per 100 kilograms (from \$2.75 to \$3.85 per bushel), the first time that the duty on wheat exceeded appreciably that on rye. In succeeding years, fixed prices for rye and feeding barley were increased and fixed prices for malting barley were introduced.

More protection for butter had been desired long before the Fat Plan was inaugurated. Treaties with foreign countries delayed this, however, and increases in import duties did not become possible until 1930. Until the middle of 1930, prices of butter in Berlin were practically the same as those in Copenhagen. In 1931, the Danish prices were lower than those in Germany by about 10 percent. In 1932, the margin was increased to more than 30 percent, and in 1933 Danish prices were only half as high as the prices in Berlin. Still, the pegging of butter prices was not carried so far as the pegging of rye prices, which at that time were about three times as high as those on world markets.

The most sweeping part of the Fat Plan applied to the production of margarine, which is the principal fat in the German diet. The production of margarine and salad oil for each quarter of the calendar year was restricted to 60 percent of the quantity produced from October 1 to December 31, 1932, and an equalization fee was placed on both products, which more than doubled the price of the cheap grade of margarine. After November 1, 1934, the quotas for margarine production were replaced by fixed prices, but the regulation was unchanged for salad oil. The price of the cheapest grade of margarine, 63 pfennigs per 0.5 kilogram, was exactly two and a half times the price which prevailed before the restrictions were promulgated. The import duty on lard was raised in a few jumps from Rm. 6 on February 2 to Rm. 100 per 100 kilograms (about 15 cents per pound) on July 15, 1933, making lard prices to the consumer considerably above the level of pre-depression years. Furthermore, under the Fat Plan neutral lard was produced for some time at great cost in order to increase the domestic supply of fat, to create a new outlet for grain, and to support hog prices.

Some significant steps for supporting prices of meat were taken in 1930, when imports of frozen meat were discontinued and import duties on other meat and on livestock considerably raised. Further increases in duties followed in 1931 and 1933. Although the slump in livestock prices was overcome, they remained relatively the lowest prices of all major agricultural products. By increasing the import duty on eggs from 5 marks to 30 and then to 70 per 100 kilograms (the last about 10.5 cents per pound) and providing import quotas, egg prices were also raised considerably above the level of world prices. Finally vigorous measures were taken to protect the domestic production of oilseeds, flax, and wool, for which duty-free admission was traditional. The grain battle was thus extended to include not only almost all agriculturally produced foodstuffs but other materials as well.

Regulation of domestic prices: The control of prices is one of the central features of German agricultural market regulation. Farm prices, except for a few horticultural products, are now regulated for practically all products. Trade and processing margins have also been brought gradually under control, so that price fixation or regulation now reaches down from the producer to the consumer for most of the staple foodstuffs, such as grain and grain products, potatoes, milk and dairy products, eggs, fats, and most types of meat and meat products. In some instances price regulation extends only from the producer to the wholesale distributor, as in the case of sugar, cabbage, canned foods, and hops. <sup>11/</sup> Prices of agricultural implements and other items used in production are also largely regulated partly by arrangements between the Reischsnährstand and the various industrial cartels.

Fixed or otherwise regulated prices have generally varied both regionally and according to quality of the product, with a view to obtaining what might be called a natural national equilibrium. In some cases, where adequate standards of quality were lacking, price regulation has been confined to the establishment of minimum prices (wine, fish, etc.) or maximum prices (livestock purchases outside the public markets). Products having a particularly wide range of qualitative variety or those extremely difficult to classify have been subjected to compulsory marketing in specially authorized markets and to grading by special classing committees which determine the class (for which prices are fixed) into which the product should fall. This is the case with slaughter cattle, wool, tobacco, and, in part, also with hops. <sup>12/</sup> The lack of regular provision for seasonal adjustment in regulated prices has been one feature of the German farm-price regulation that has rightly been criticized, notably in the case of milk and livestock marketing. To mitigate seasonal surpluses and deficits, Government institutions have stepped in and taken up supplies in times of market congestion, and have sold from their stocks in time of undersupply.

Assurance of farmers' markets and of consumers' supplies: The principle that all farm products should find an assured market and the thesis that the "Nährstand is responsible for the nutrition of the German people and should, therefore, assure supplies have led, gradually, to a high degree of physical control over the flow of produce from the farm to the ultimate consumer. The machinery and methods of control involve such a wide range of activities as the extension to the farmer of the right and, at the same time, the obligation to deliver prescribed contingents or quantities of certain products (bread grains, fresh milk, sugar-beets), the prohibition of sales of many products from the farm unless approved by supervisory bodies, the regional equalization of supplies, the actual

<sup>11/</sup> Cf. "Wie der Nährstand arbeitet" by Günther Keiser, in "Die Wirtschaftskurve", Heft 11/1936, 15. Jahrgang, Frankfurt-Main.

<sup>12/</sup> Cf. G. Keiser, loc. cit., p.125.

purchase, temporary storage, and resale of products by governmental organs (Reichsstellen), as well as the arbitrary regulation of imports and exports.

At times of shortage, since it is the Government's policy not to allow prices to rise, the regulation of consumption has also been undertaken, by rationing in various forms, to assure an equitable distribution of supplies. A limitation on the slaughter of livestock to certain percentages of a base period has, for example, been in effect during 1935-36. There was also a limitation on butter deliveries by dairies to retailers in the winter of 1935-36, and since January 1, 1937, retailers have been required to prepare lists of their regular customers for the purpose of rationing the consumption of fats - a procedure which many retailers had adopted on their own initiative during the butter shortage of the winter 1935-36 and the recurring egg shortages in 1936.

Regulation of imports: A necessary adjunct to the regulation of domestic markets and prices and to the guaranty of a market for domestic produce at specified prices, as well as of consumer supplies, has been the close regulation of Germany's relatively large imports of farm products and the prices of these products. German agricultural policy has made large use of import regulation as an instrument of market control. The Reich offices which exercise the control of farm imports and import prices are in a position to do so effectively, since they are, at the same time, currency supervisory offices determining the allocation, by products and importers, of the currency or clearing payment permits allotted for agricultural products, in toto, by the central currency authority in the Ministry for Economic Affairs.

The Reich offices either themselves buy on foreign markets, eventually through the agency of a merchant, or otherwise control every purchase by importers through the allotment of trading certificates and buying permits. Without a buying permit no import purchase may be made, and without a trading certificate no foreign product may enter the domestic markets. The trading certificates at the same time provide the means of import price control since they must be purchased from the Reich offices. The price of the certificate is fixed, but changed from time to time, depending on world market movements, so as to bring the inland price of the foreign product in line with the price of the domestic product. These "equalization fees", as the price of the trading certificates is commonly called since they "equalize" domestic and foreign prices, are in actuality sliding import duties, or super-duties, which must be paid in addition to the regular import tariff.

This machinery gives the Reichsstellen a virtual import monopoly for agricultural products, and it has been used as an instrument of trade policy to direct import purchases of farm products deliberately to countries that buy German goods. The National Socialist import policy and

especially the determination of the volume of imports of farm products, originally in the hands of agrarian authorities, has now, in practice, come largely under the control of the central currency authorities in the Ministry for Economic Affairs. The difficult currency and trade position has made it impossible for this authority to permit imports to the extent that the Ministry of Agriculture is prepared to permit and even desires, now that shortages have arisen. The current food and feed shortages, which the agricultural authorities would gladly alleviate by increased importation if they were allotted the necessary currency or clearing balances, must be ascribed to general economic, political, and financial policies which have led to depletion of foreign exchange and gold reserves.

#### Trends in Agricultural Production

##### Rapid expansion in production during pre-war period

The pre-war agricultural policy had a decided effect upon domestic production. The acreage utilized for the four principal grains (rye, wheat, barley, and oats) increased from 34,466,000 acres in 1893 to 35,007,000 acres in 1900, and to 36,889,000 acres in 1913 (see table 2). In order to take advantage of the favorable conditions created for the production of rye, as well as of oats, a rather large amount of land was deforested in the east. Since the better soils had been placed in cultivation at a much earlier date, the new lands consisted primarily of the sandy formations already mentioned, which were suitable only for rye and lupines. In contrast to developments in other countries of Western Europe, Germany's cropped plowland was considerably increased. It amounted to 56,858,000 acres in 1893, grew to 58,041,000 acres in 1900, and in 1913 totaled 59,654,000 acres. This increase was obtained by a reduction in the land in fallow. The proportion of acreage in the four principal grains to the total cropped plowland remained practically stable from 1893 to 1900 at around 62 percent and even increased to 63.4 percent between 1900 and 1913. This, too, was contrary to trends in other countries having similar natural and economic conditions.

Although the total area in grains made a rather marked advance in the last 13 years before the war, the wheat area actually declined, and the acreage in barley remained unchanged. The rye acreage increased by 9.0 percent, and the acreage in oats was raised by 8.3 percent. The acreage in potatoes also expanded; from 1893 to 1913, the increase was no less than 14.4 percent. In the same period, the area in dry legumes and oil-seeds was reduced by nearly half. The acreage in sown grasses increased rapidly prior to 1900 but made no further progress in the 13 years following.

The high prices of grains, sugar beets, and several other products made possible a tremendous increase in the application of fertilizers

(see table 4), and other improvements in the technic of production were introduced. An unprecedented gain in yields per acre resulted. Average yields of rye, for example, increased from some 21.5 bushels per acre to about 30.0 bushels during the last 20 years preceding the World War. (See table 5.)

Table 4. Utilization of artificial fertilizers, specified years  
(Plant-food basis)

Year	Nitrates	Phosphates	Potash
	1,000 short tons	1,000 short tons	1,000 short tons
1890 .....	55	204	30
1895 .....	73	290	66
1900 .....	86	336	129
1905 .....	111	477	223
1910 .....	172	628	396
1913 .....	231	716	591
1914-15 .....	108	572	473
1915-16 .....	80	468	675
1916-17 .....	88	406	804
1917-18 .....	101	369	859
1918-19 .....	127	255	739
1919-20 .....	175	152	834
1920-21 .....	234	284	638
1921-22 .....	331	344	854
1922-23 .....	317	325	765
1923-24 .....	281	184	589
1924-25 .....	377	411	728
1925-26 .....	367	427	675
1926-27 .....	441	537	789
1927-28 .....	431	561	777
1928-29 .....	477	585	842
1929-30 .....	457	603	861
1930-31 .....	391	523	737
1931-32 .....	359	436	617
1932-33 .....	388	440	681
1933-34 .....	430	508	785
1934-35 .....	469	601	900
1935-36 .....	540	701	1,046

Source: Pre-war calendar years and 1914-15 to 1923-24 are from Sering, Die deutsche Landwirtschaft, p. 786; 1924-25 to 1933-34 are from Wirtschaft und Statistik, No. 16, August 1934; 1934-35 and 1935-36 are from Statistisches Jahrbuch für das Deutsche Reich, 1936.

Table 5. Acreage, production, and yield per acre of principal crops, average 1894-1898, 1899-1903, 1904-1908, 1909-1913, annual 1914-1935 a/

Year	Wheat			Rye			Barley			Oats		
	Acreage	Pro- duc- tion	Yield	Acreage	Pro- duc- tion	Yield	Acreage	Pro- duc- tion	Yield	Acreage	Pro- duc- tion	Yield
	1,000	1,000	Bush- els	1,000	1,000	Bush- els	1,000	1,000	Bush- els	1,000	1,000	Bush- els
Average:	acres	bushels	els	acres	bushels	els	acres	bushels	els	acres	bushels	els
1894-1898	4,808	123,450	25.7	14,743	329,152	22.3	4,050	126,432	31.1	9,845	430,818	43.8
1899-1903	4,629	129,652	28.0	14,730	352,639	23.9	4,208	144,503	34.3	10,369	501,070	48.3
1904-1908	4,651	137,357	29.5	15,077	392,010	26.0	4,070	142,740	35.1	10,500	534,035	50.9
1909-1913 <u>b</u> /	4,768	152,119	31.9	15,387	445,222	28.9	3,976	153,529	38.6	10,750	591,996	55.1
1909-1913 <u>c</u> /	4,012	131,116	32.7	12,731	371,808	29.2	3,372	129,700	38.5	9,536	527,053	55.3
Annual:												
1914 <u>c</u> /	4,250	127,818	30.1	13,132	347,181	26.4	3,909	144,125	36.9	9,847	566,692	57.5
1915 <u>c</u> /	4,276	125,812	29.4	12,920	300,515	23.3	4,002	114,077	28.5	10,072	368,561	36.6
1916 <u>c</u> /	3,666	102,216	27.9	12,005	287,290	23.9	3,766	128,450	34.1	7,951	434,612	54.7
1917 <u>c</u> /	3,348	77,385	23.1	11,116	228,067	20.5	3,610	85,644	23.7	7,830	226,383	29.2
1918 <u>c</u> /	3,343	85,152	25.5	11,606	260,044	22.4	2,997	93,504	31.2	7,510	301,839	40.2
1919	3,180	79,001	24.8	10,755	237,615	22.1	2,781	75,211	27.5	7,255	303,521	41.8
1920	3,398	82,574	24.3	10,588	194,244	18.3	2,949	82,330	27.9	7,940	332,490	41.9
1921	3,560	107,766	30.3	10,538	267,626	25.4	2,808	89,039	31.7	7,813	344,774	44.1
1922	3,395	71,926	21.2	10,236	206,033	20.1	2,846	73,824	25.9	7,911	276,619	35.0
1923	3,653	106,448	29.1	10,790	263,037	24.4	3,216	108,446	33.1	8,265	420,731	50.9
1924	3,623	89,199	24.6	10,525	225,573	21.4	3,573	110,226	30.8	8,709	389,525	44.7
1925	3,835	118,213	30.8	11,635	317,418	27.3	3,545	119,373	33.7	8,531	384,740	45.1
1926	3,957	95,429	24.1	11,694	252,187	21.6	3,671	113,102	30.8	8,590	435,722	50.7
1927	4,321	120,522	27.9	11,610	269,025	23.2	3,653	125,750	34.4	8,589	437,249	50.9
1928	4,269	141,593	33.2	11,452	335,499	29.3	3,753	153,721	41.0	8,696	481,960	55.4
1929	3,955	123,062	31.1	11,680	321,045	27.5	3,835	146,089	38.1	8,793	508,633	57.8
1930	4,402	139,217	31.6	11,641	302,312	26.0	3,753	131,373	35.0	8,499	389,688	45.9
1931	5,355	155,545	29.0	10,789	262,977	24.4	4,001	138,628	34.6	8,310	427,479	51.4
1932	5,635	183,827	32.6	10,996	329,255	29.9	3,875	147,647	38.1	8,116	458,160	56.5
1933	5,727	205,920	36.0	11,179	343,570	30.7	3,918	159,287	40.7	7,864	478,983	60.9
1934	5,430	166,541	30.7	11,097	299,496	27.0	4,030	147,152	36.5	7,773	375,631	48.3
1935	5,205	171,488	32.9	11,218	294,399	26.2	3,965	155,586	39.2	6,892	371,040	53.8
	Potatoes			Sugar beets			Fodder beets			Clover		
	1,000	1,000	Bush- els	1,000	1,000	sh. tons	1,000	1,000	sh. tons	1,000	1,000	sh. tons
Average:	acres	bushels	els	acres	sh. tons	tons	acres	sh. tons	tons	acres	sh. tons	tons
1894-1898	7,549	1,280,289	169.6							d/4,881	d/ 10,421	2.1
1899-1903	7,980	1,573,516	197.2							4,569	9,082	2.0
1904-1908	8,153	1,612,505	197.8							4,996	11,015	2.2
1909-1913 <u>b</u> /	8,229	1,681,959	204.4							4,868	10,384	2.1
1909-1913 <u>c</u> /	6,775	1,373,609	202.7							e/4,060	e/ 8,305	2.0
Annual:												
1914 <u>c</u> /	6,995	1,392,215	199.0	1,153	15,417	13.4				4,410	10,925	2.5
1915 <u>c</u> /	7,229	1,619,641	224.0	838	10,366	12.4				4,238	7,596	1.8
1916 <u>c</u> /	5,693	747,550	131.3	856	9,510	11.1				4,157	10,049	2.4
1917 <u>c</u> /	5,193	1,061,736	204.5	839	9,422	11.2				4,509	7,995	1.8
1918 <u>c</u> /	5,643	900,390	159.6	848	9,487	11.2				3,886	6,314	1.6
1919	5,319	781,125	146.9	741	6,389	8.6				4,628	9,099	2.0
1920	5,985	1,024,175	171.1	805	8,746	10.9				4,856	10,918	2.2
1921	6,540	960,809	146.3	962	8,795	9.1	1,802	19,643	10.9	4,944	7,864	1.6
1922	6,724	1,494,005	222.2	1,031	11,896	11.5	1,939	27,284	14.1	4,676	7,745	1.7
1923	6,738	1,197,095	177.7	948	9,586	10.1	1,869	24,242	13.0	4,818	10,569	2.2
1924	6,821	1,337,540	196.1	975	11,317	11.6	1,809	25,626	14.2	4,635	9,768	2.1
1925	6,941	1,532,872	220.8	996	11,382	11.4	1,774	27,284	15.4	4,715	9,977	2.1
1926	6,819	1,103,427	161.8	996	11,569	11.6	1,794	25,433	14.2	4,430	9,467	2.1
1927	6,918	1,379,716	199.4	1,073	11,964	11.2	1,747	26,884	15.4	4,516	10,673	2.4
1928	7,039	1,516,373	215.4	1,123	12,137	10.8	1,766	24,961	14.1	4,476	8,801	2.0
1929	7,006	1,472,568	210.2	1,128	12,226	10.9	1,805	26,685	14.8	4,331	8,940	2.1
1930	6,930	1,730,596	249.7	1,194	16,445	13.8	1,824	33,512	18.4	4,355	10,665	2.4
1931	6,979	1,611,797	230.9	941	12,168	12.9	1,933	32,877	17.0	4,275	10,321	2.4
1932	7,114	1,727,540	242.8	669	8,681	13.0	2,013	38,014	18.9	4,319	10,601	2.5
1933	7,138	1,619,331	226.9	751	9,457	12.6	2,043	33,859	16.6	4,301	9,709	2.3
1934	7,182	1,718,876	239.3	881	11,458	13.0	2,088	37,263	17.8	4,160	7,811	1.9
1935	6,796	1,507,048	221.8	921	11,649	12.6	2,092	38,262	18.3	3,633	7,915	2.2

Compiled from official sources. a/ The comparability of the data is limited. Pre-war data are probably too high and figures for 1914 to 1923 are too low. b/ Pre-war boundaries. c/ Post-war boundaries. d/ Includes alfalfa. e/ Average 1911-1913.

These increases in acreages and yields per acre resulted in a marked expansion in total crop production. A particularly noteworthy increase took place in rye and oats. Rye production advanced from about 325,000,000 bushels in 1893 to over 450,000,000 bushels in 1913, and the production of oats made a similar gain. Unfortunately, there are no reliable data on the production of animal products, but there is no doubt that increases in meat production were also great. According to J. Schmidt and others, <sup>13/</sup> who based their estimates primarily on those of F. B. Esslen, <sup>14/</sup> the average domestic production of meat in 1911-1913, was practically twice that of 1892. The small production of mutton, however, was reduced to less than half of the earlier amount. The production of beef and veal was raised by about 50 percent, while that of pork was enlarged by over 100 percent. The increase in the production of milk and eggs was probably much smaller than that of meat production. According to data on chicken numbers, the increase in egg production from 1900 to 1913 must have been about 33 percent, since the yield per hen probably did not increase during the period. From these gains, it may be inferred that total agricultural production increased at a very rapid rate during a rather long period before the World War.

#### Agricultural production sharply reduced during the war

During the war years, men were taken from agricultural work for military duties, and the war prisoners assigned to agricultural work were only a small compensation for this loss. Agriculture also had to give up more than a million horses, and supplies of new farm machinery were small. Thus, Germany's agricultural production would have been sharply curtailed, as well as the supply of agricultural products to population and industry, even if the country had not previously depended on foreign markets for a large amount of agricultural products and fertilizers and for a great number of agricultural workers. This dependency on foreign countries in time of peace greatly increased the difficulties encountered during the war.

Official statistics on crop production during the war years are not trustworthy, or at least they are not comparable with those of the pre-war years. There is no doubt, however, that both acreage and production declined markedly. <sup>15/</sup> A considerable decrease in yields is clearly indicated by the reduced utilization of artificial fertilizers. The utilization of phosphoric pentoxide ( $P_2O_5$ ) had declined by 1919-20 to about a quarter of what it averaged in the last 2 years before the war.

<sup>13/</sup> "Viehwirtschaft und Fleischversorgung in Deutschland" in Deutsche Agrarpolitik, Berlin, 1933, Part 1, p. 250.

<sup>14/</sup> Die Fleischversorgung des Deutschen Reichs, Stuttgart, 1912.

<sup>15/</sup> See, for example, P. Quante, "Die Zuverlässigkeit der deutschen Anbau- und Erntestatistik unter besonderer Berücksichtigung der preussischen Verhältnisse." Zeitschrift des Preussischen Statistischen Landesamts, 1924, Vols. III and IV, pp. 1-70.

The utilization of nitrogen was reduced from 118,000 short tons, the average for 1912-13 to 1913-14, to 80,000 tons in 1915-16 (see table 4). After artificial nitrogen began to be produced in Germany, its utilization in agriculture was increased slowly at first but later more rapidly until the pre-war amount was reached in 1919-1920. Potassium was the only fertilizer the supplies of which were not impaired during the war.

A further indication of the decrease in yields may be seen in the figures on sugar-beet production, which are probably fairly reliable, since they have been checked by the amounts of sugar obtained. According to official data, the yield of sugar beets in 1916-1918 was 81.1 to 83.6 percent of that in 1913, while in 1919 it amounted to only 64.4 percent of the 1913 figure. Professor F. Aereboe 16/ assumed that the production of the four principal grains in the 5 war years was 22 percent smaller than the pre-war production.

Domestic feed production diminished more than did total crop production, because a much larger proportion of the crops had to be used for human consumption to make up, at least to some extent, for reduced imports of foodstuffs. Moreover, almost no imported feed could be secured, so that total war-time supplies of feed amounted to only a small percentage of the pre-war total.

By 1921, the number of cattle had been reduced by about 10 percent and the number of hogs by about 30 percent (see table 6). The reduction in meat production was still larger, however, since the average weight of cattle for slaughter had decreased greatly and, besides a small diminution in the average slaughter weight of hogs, the proportion of slaughterings to the number of hogs on hand was smaller. Deprived of imported protein supplements, milk production also decreased considerably more than did the number of cows. The data given by Aereboe 17/ indicate a reduction of about 20 percent in the milk yield of cows under the regulation of milk-control associations. The reduction in the yield of milk from all cows probably was less than that.

In spite of the great decline in the food supply, millions of soldiers had to be fed well. Furthermore, the farm population could not be induced to curtail its consumption in proportion to the decrease in supplies. The result was that, with the exception of the military and agricultural classes, the population suffered intensely from hunger. This suffering left lifetime traces on some of the people, such as the children of laborers, and in spite of a flourishing bootleg business in foods, even the well-to-do suffered considerably. But great as was the reduction in food supplies, the contraction in the supply of textiles and other industrial goods made of imported agricultural products was still greater, notwithstanding the ingenuity of the Germans in developing substitutes.

16/ Der Einfluss des Krieges auf die landwirtschaftliche Produktion in Deutschland, Berlin, 1927, p. 87.

17/ Ibid., p. 88.

Table 6. German livestock numbers, December 1, 1900-1936

Year	Cattle		Sheep		Goats		Chickens		Geese		Ducks	
	Horses	Total	Milk cows	Hogs	Thousands	Thousands	Thousands	Thousands	Thousands	Thousands	Thousands	Thousands
<i>Old boundaries</i>												
1900	4,195	18,940	a/ 2/ 10,205	16,807	6,693	3,267	55,396	b/ 6,722	a/ 2/ 2,605	b/ 2,799	b/ 2,299	
1912	4,523	20,182	20,994	21,924	5,803	3,410	72,837	a/ 2/	a/ 2/	3,799	2,332	
1913	3,227	20,994	21,829	25,659	5,521	3,548	3,538	63,905	7,281	2,476	2,371	
1914	3,435	21,829	25,341	5,471	5,073	3,438	58,445	3,749	3,842	2,594	2,025	
1915	3,342	20,317	20,874	17,287	4,979	3,940	52,559	4,116	2,404	1,668	1,668	
1916	3,304	20,874	20,095	17,002	4,954	4,315	46,432					
1917	3,324	11,052	10,545	11,052	4,954	4,426						
1918	3,492	17,650	17,650									
<i>New boundaries (ex. the Saar)</i>												
1913	3,807	18,474	9,973	22,533	3,164	4,140	4,341	5,970	4,408	5,851	2,043	
1919	3,465	16,318	7,797	11,518	4,140	4,459	6,150	53,057	5,525	5,630	2,410	
1920	3,583	15,307	7,923	14,179	5,891	4,296	5,000	320	5,391	5,391	2,563	
1921	3,565	16,791	8,247	15,818	5,556	4,140	5,141	5,956	5,956	5,956	2,850	
1922	3,550	16,316	8,205	14,678	5,556	4,675	4,360	6,75	6,75	6,75	3,316	
1923	a/ 2/	16,591	8/	17,305	6,105	4,753	3,796	64,122	5,339	5,339	5,654	
1924	3,855	17,326	8,921	16,895	5,735	4,753	4,080	3,484	6,7,800	5,495	6,246	
1925	3,917	17,202	9,145	16,200	4,424	4,080	2,899	3,819	71,350	5,505	5,654	
1926	3,873	17,221	9,238	19,424	3,635	3,635	2,890	76,003	68,104	6,246	5,654	
1927	3,810	18,011	9,393	22,899	3,819	3,225	3,625	83,274	5,654	5,654	5,654	
1928	3,718	18,414	9,474	20,106	3,680	3,480	2,581	84,104	5,654	5,654	5,654	
1929	3,617	18,033	9,407	19,944	3,480	3,504	2,581	84,104	5,654	5,654	5,654	
1930	3,522	18,470	9,464	23,142	3,504	3,499	2,516	84,224	5,685	5,685	5,685	
1931	3,451	19,124	9,659	23,803	3,499	3,499	2,516	84,224	5,685	5,685	5,685	
1932	3,395	19,139	9,802	22,659	3,405	3,405	2,503	84,225	5,790	5,790	5,790	
1933	3,397	19,739	10,098	23,690	3,587	3,587	2,555	87,369	6,143	6,143	6,143	
1934	3,360	19,196	10,120	23,170	3,463	2,494	2,494	85,650	5,839	5,839	5,839	
1935	3,350	16,674	9,911	22,725	3,923	2,442	2,442	85,579	5,460	5,460	5,460	
1936	3,398	19,995	10,058	25,752	4,324	2,570	2,570	85,786	5,855	5,855	5,855	

Compiled from official sources. a/ Not available. b/ 1912. c/ October 1.

Production increased under currency inflation

To agricultural producers, the situation in Germany during the post-war years previous to the stabilization of the German mark differed considerably from that of the war years. To consumers, however, the situation was not greatly relieved until the inflation ended.

Import duties were not restored until after the stabilization of the mark. Sentiment had been aroused against the protective policy, because it failed to prevent suffering during the war. This, it is true, was attributed by some economists not to the protective policy as a whole but to certain peculiarities of the pre-war policy, and they argued for measures which would assure the greatest possible self-sufficiency.<sup>18/</sup> But first the hungering population had to get enough to eat, and this seemed impossible even with unrestricted imports. Moreover, during the inflation, the increase in the value of foreign currency had a sufficiently protective effect on every line of domestic production. It caused a great improvement in the situation of the agricultural producers in that it practically freed them from high indebtedness incurred before the war. Finally, they were able not only to replenish their capital in machinery and buildings but sometimes through small sacrifices to increase it beyond the pre-war size.

Soil fertility being largely exhausted, the yields per acre remained low, although the use of artificial fertilizers was increased considerably. The foreign exchange situation did not favor the production of animal products when this was dependent upon imported feedstuffs; hence the number of hogs did not make any appreciable gain. The kinds of livestock with a slow turnover were favored, however, since they provided a convenient means of accumulating capital in the form of goods (flight from money). Cattle numbers, therefore, were increased considerably, while the number of horses on farms was raised even above the pre-war total.

When the military blockade was lifted, and the size of the military force reduced, it seems as if an increase in domestic production should have resulted in a greater supply of foodstuffs for the population. The gain in domestic production was small, however, and Germany's industrial exports were rather unprofitable. Little foreign currency was available, and this had to be used for payments to the Allies. The possibility of importing foodstuffs was, therefore, more nominal than real. Imported goods were also very high in German marks, frequently prohibitive. Furthermore, the moral restrictions for moderating consumption

<sup>18/</sup> The most important document of this kind was Sering's "Die Verordnung der Reichsregierung vom 29. Januar, 1919, Zur Beschaffung von landwirtschaftlichem Siedlungsland", Jahrbuch für Gesetzgebung, Verwaltung und Volkswirtschaft im Deutschen Reich, 1919, Jahrgang 43, Heft 2, p. 183.

on farms were no longer present, and the authority for enforcing the legal restrictions was greatly reduced. In the last period before stabilization, farmers, wholesalers, and retailers computed their goods in foreign currency, and their prices advanced at practically the same phenomenal tempo as did the rates on foreign exchange. The great masses of the population not on farms, although consuming more than during the war, still suffered greatly from undernourishment. In 1922-23, the situation was in fact not much better than during the war.

Production recovers to pre-war levels in post-inflation period

The index of the volume of total agricultural production increased from 88 in 1924-25 (1927-28 to 1928-29 = 100) to 104 in 1932-33; i.e., by 18 percent, according to estimates of the German Institute for Business Research (Institut für Konjunkturforschung). The index rose to 110 in 1933-34 and to 115 in 1934-35 but declined to 111 in 1935-36. The total increase in production from 1924-25 to 1935-36 amounted to 29.5 percent. The population increased from 1925 to 1935 by only about 5 percent. Thus there was an increase in per-capita production in the decade of about 20 percent. See figure 3.

Table 7. Total Agricultural Production in Germany  
(1927-28 to 1928-29 = 100)

Year	Index number	Year	Index number
1924-25.....	88	1930-31.....	105
1925-26.....	90	1931-32.....	108
1926-27.....	88	1932-33.....	104
1927-28.....	98	1933-34.....	110
1928-29.....	102	1934-35.....	115
1929-30.....	105	1935-36.....	111

Weekly Report of the German Institute for Business Research, August 12, 1936.

The great increase in agricultural production during this period was to some extent simply a recovery of what had already been attained before the war, and it is easier to retrieve an earlier position than to gain new ground. Most of the increase in total production took place in the first 4 or 5 years of the period. In the years of the severest depression (from about 1929-30 to 1933-34), however, agricultural production still increased on an average of slightly more than 1 percent per year.

The large increase in total agricultural production revealed by the index of the Institute for Business Research can be traced in each major agricultural product, with the exception of sugar. It is rather

significant that the increase was not always due to expansion in area or numbers, but in many cases was achieved entirely, or to a large extent, by higher yields per acre and higher productivity per animal. The relation between prices of fertilizers and oil cake, on the one hand, and grain, milk, and dairy products, on the other, would probably make a still larger increase in yields profitable, but the adjustment of production to prices, although much faster now than in former times, still takes considerable time.

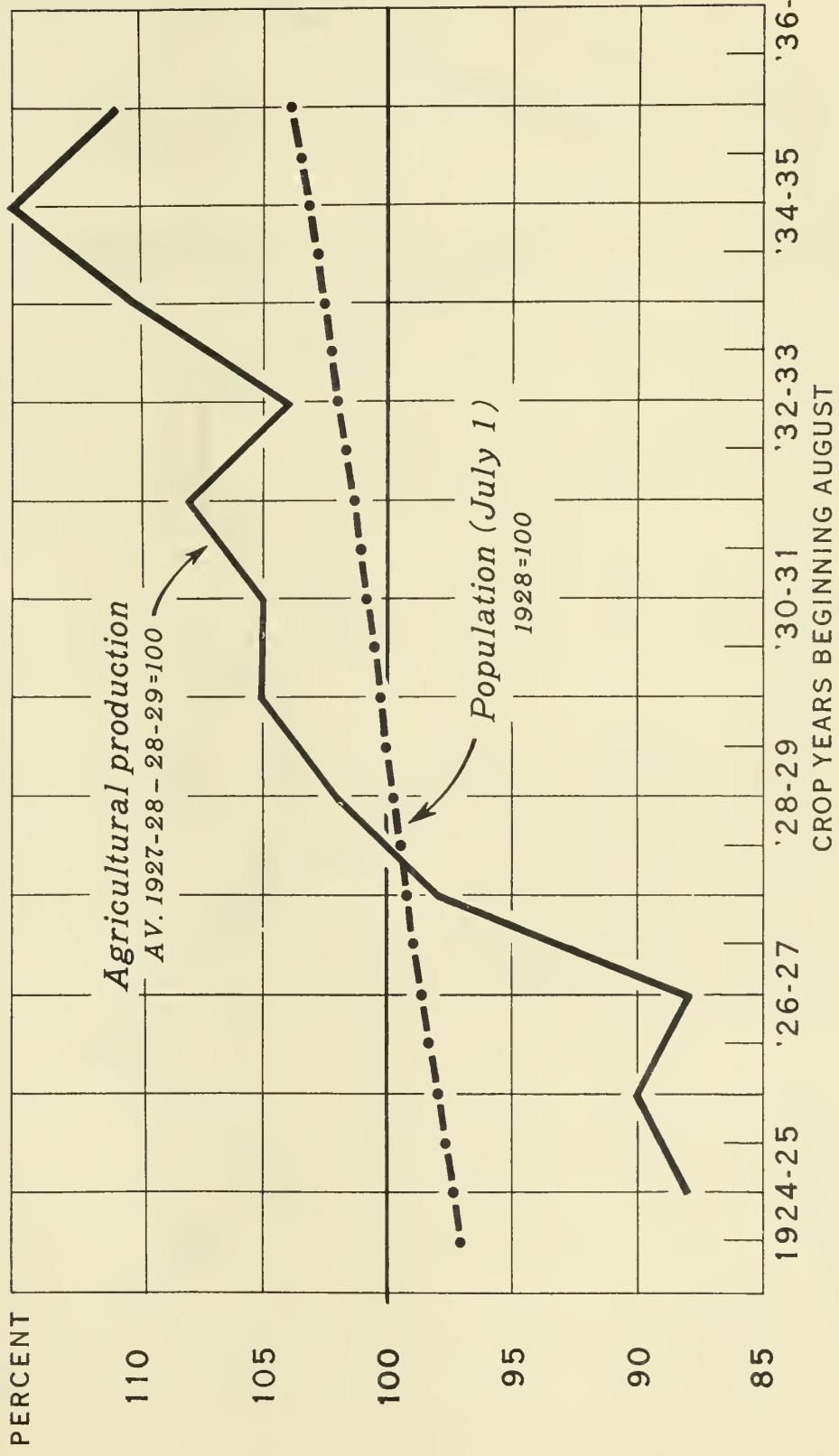
The reason for the increase in yields above the pre-war level is to be found in improved production methods and especially in the greater utilization of artificial fertilizers which, following the marked reduction in their cost, has materially surpassed the pre-war level. This increase in yields, however, was not uniform throughout the post-war period. In the first part of the period, the utilization of artificial fertilizers increased rapidly. In 1928 and 1929, when the peak was reached, the consumption of nitrogen was two and one half times larger than before the war, while the consumption of potassium was nearly twice as large. The depression caused a decline in the utilization of artificial fertilizers during 1930-31 and 1931-32. The consumption of nitrogen and potassium in these years was still considerably larger than before the war, but consumption of phosphates was only three-fourths as large as in years immediately prior to the war. Since 1931-32, the consumption of fertilizers has again increased, and the peak of 1929-30 is now considerably exceeded. Consumption is expected to increase further as a result of a recent decree lowering fertilizer prices by as much as 25 percent.

According to official figures, corrected for overestimates 19/ in the immediate post-war years, the total production of grains in Germany increased from 20,687,000 short tons in 1924 to 28,250,000 tons in 1933, a gain of over 36 percent. Because of unfavorable weather conditions, the production in 1934 was less than 24,000,000 tons; in 1935, it was somewhat more, indicating an increase of about 3,400,000 tons since 1924. Most of this increase was due to expansion in the production of bread grains, particularly wheat.

The increase in the wheat acreage is primarily a shift from rye and, to some extent, from oats. This occurred in spite of the fact that the relationship between wheat and rye prices in the post-war years was no more favorable for wheat than it had been in the pre-war years. This indicates that producers were better prepared to overcome the difficulties caused by such shifts than they had been before the war. Progress in seed selection and low fertilizer prices favored the change to wheat.

19/ Pre-war grain figures are considered to be about 10 percent too high, those for 1924 about 10 percent too low, and those for 1925 to 1927 about 5 percent too low.

GERMANY: AGRICULTURAL PRODUCTION AND  
POPULATION, 1924-25-1935-36

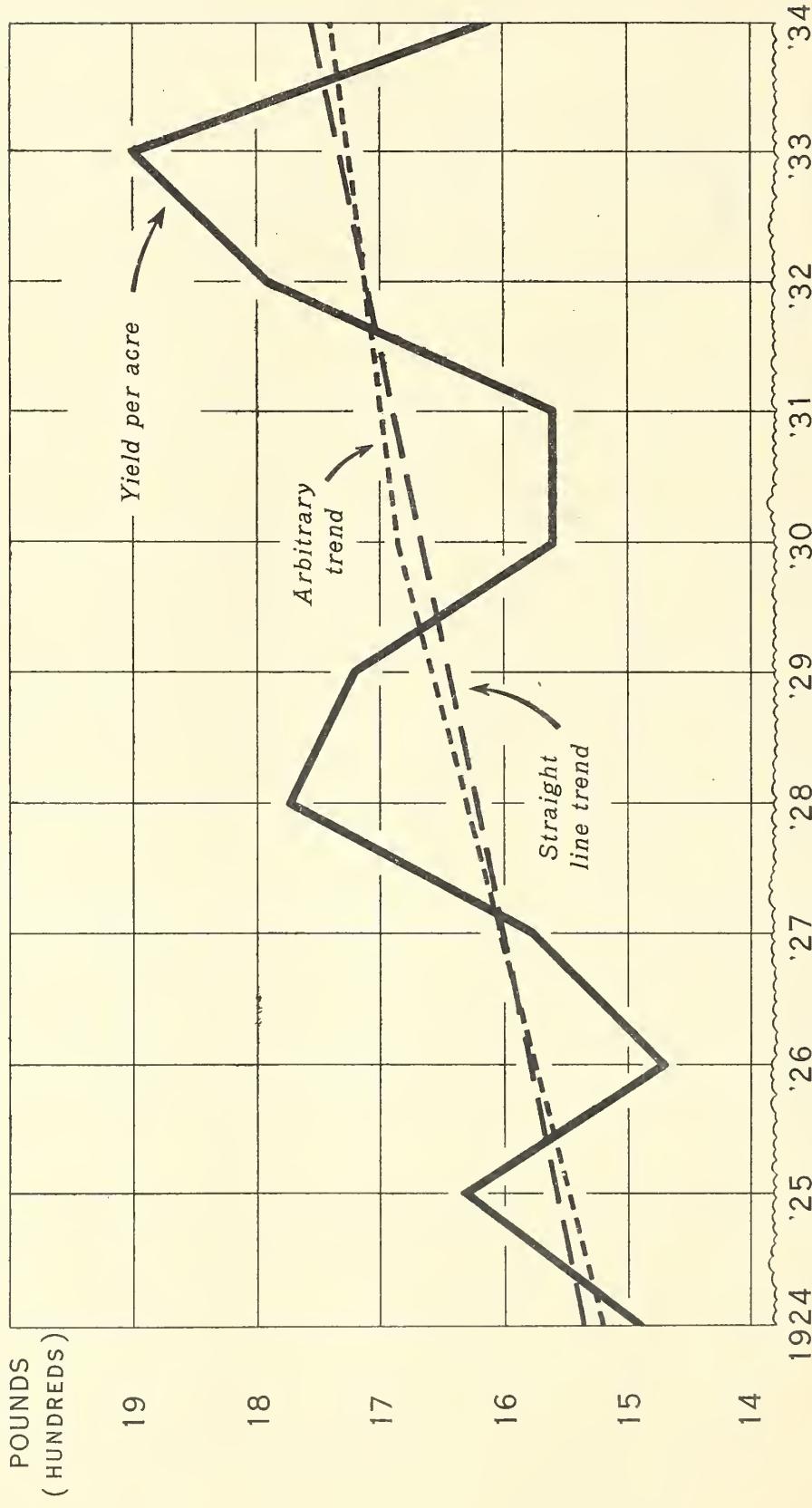


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FIGURE 3

GERMANY: COMBINED YIELD PER ACRE OF RYE,  
WHEAT, BARLEY, AND OATS, 1924-1934



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FIGURE 4

Oat acreage has been declining in recent years, but barley acreage increased about 13 percent during the last decade. This redistribution of the grain acreage resulted in a much better balance between domestic production and consumption.

Primarily as a result of increased yields, production of potatoes in 1934 and 1935 exceeded that of 1924 by about 20 percent. Potatoes are used to a considerable extent for feed purposes in Germany. Converting potatoes into a grain equivalent by assuming that four units of potatoes are equal to one of grain, this meant an increase in domestic feed supplies from potatoes alone during this period equivalent to about 2,000,000 short tons of grain.

While the acreage in sugar beets is now smaller than during the early post-inflation years, or the pre-war years, there has been a substantial increase in the acreage of other root crops, such as feed beets, mangels, and turnips.

The acreage in natural meadows showed only a slight increase during the post-inflation years. While there has been much propaganda in favor of better care of meadows, official statistics do not indicate any increase in yields.

During the post-inflation years, there was a marked decline in the acreage of dry legumes, which was not offset by an increase in yields. Furthermore, there was no marked increase in the acreage of sown grasses. The acreage of clover actually declined from 1924 to 1935, but the acreage of alfalfa showed a substantial increase after 1927, though it is still much below the pre-war area.

Thus we find that, although the total production of all crops during the post-inflation years increased substantially, there was little or no change in the production of carbohydrates, grains, and potatoes, which are better suited to German conditions.

The production of animal products increased during the period 1924-25 to 1935-36 even more rapidly than that of crops. Meat production increased by 26 percent from 1925 through 1934, according to the computations of A. Hanar of the Institut für Landwirtschaftliche Marktforschung, Berlin. Milk production increased by 35 percent and egg production by 50 percent in the same period, according to the Institute for Business Research, Berlin. As in the case of crop production, the gain was most rapid in the earlier years of this period. The production of livestock products in 1936 was adversely affected by the shortage of feed supplies, particularly of concentrates, the imports of which were sharply curtailed.

Appraisal of the Capacity to Produce

The announced policy of the present German Government is self-sufficiency in the major agricultural products. Considerations of costs and of consumers' desires are for the most part ignored.

The alternative, a fuller participation by Germany in international trade, is not likely to materialize in the near future. This participation hinges to a considerable extent upon continued improvement in world economic conditions and the ability of Germany to solve its present monetary difficulties. Such a policy would lead to lower import barriers and increased imports of agricultural products and raw materials, which would be offset by larger exports of German industrial products. But defense considerations play such a dominant role that consequences of improvements in world trade and of an ample supply of foreign currency might well fail to produce a decisive change in agricultural policy. Increased import possibilities might be confined largely to products which are not considered vital from the standpoint of defense, such as fruits and the more expensive vegetables, and the drive toward self-sufficiency in the more important products continued.

Table 8. Proportion of net imports to the total consumption for food of specified items, 1912

Kind of food	Proteins	Fats	Carbo-hydrates	Calories
Bread grains, dry				
legumes, rice, potatoes	15	9	10	11
Vegetables .....	6	6	5	5
Fruits .....	28	34	31	32
Sugar a/ .....	--	--	50	50
Vegetable oil .....	--	92	--	92
Vegetable food stuffs, including liquors .....	15	60	5	9
Meat and fat, including those produced from im- ported barley and corn .	17	31	14	29
Fish .....	64	75	75	71
Dairy products, including those produced from im- ported feed .....	67	51	80	59
Eggs .....	40	41	42	40
Total animal products .	44	39	81	43
Total food .....	29	42	9	20

Compiled by Sering. Die deutsche Landwirtschaft, Berlin, 1932, p. 13., from the data of Kuczynski und Zuntz, Deutschlands Nahrungs- und Futter-mittel, Allgemeines Statistisches Archiv. 1915, Vol. 9, No. 1.

a/ Proportion of net exports to total consumption.

As shown in table 8, more than 40 percent of all the fats consumed in Germany in 1912 and almost 30 percent of the proteins used for human foodstuffs or for their production were imported. Moreover, the protein concentrates, such as oil cake and fish meal, on which the efficiency of hog and milk production greatly depends, were almost entirely of foreign origin. The dependence on foreign supplies, in fact, was greater than indicated by table 8 even with respect to carbohydrates. All the roughage was produced at home, but a substantial portion of grains had to be imported.

When the National Socialists came into power, the dependence of Germany on foreign supplies of proteins and fats was even greater than before the war, but the dependence on foreign carbohydrates was less. According to computations of the Institute for Business Research, Berlin, the following percentages of the total supplies were imported in 1933:

	<u>Percent</u>		<u>Percent</u>
Bread grains	1	Milk and dairy products	10
Other grains	27	Fats, edible	55
Dry legumes	44	Eggs	32
Potatoes	none	Fruits	34
Sugar	none	Vegetables	10
Meat	3		

In addition to the above, more than 90 percent of the fibers were of foreign origin. The same was true of fats used in soap production and in other industries. Moreover, per-capita consumption of all products, except potatoes and the lower-priced vegetables, declined considerably in the depression years. Had consumption been maintained at the 1928-29 level, the dependence on foreign supplies in 1933 would have been materially greater.

Obviously the goal set by the National Socialist Government, the attainment of self-sufficiency in major agricultural products, is a very ambitious one. It is interesting to note that some German officials believe that it cannot be reached and advocate more emphasis on international trade. 20/

The problem is mainly one of increasing crop production. Production of animal products, except for such by-products as lard, is purely a question of the availability of feed. The large imports of eggs, butter, and cheese in the past have been exclusively the results of the one-sided protective policy, which favored grain production for the market rather than feed production for conversion into animal products.

In the final analysis, an increase in agricultural production can be achieved only through enlarging the crop area or by improving average

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20/ See statement by Dr. H. Schacht at Frankfort, Germany, December 9, 1936.

yields. The possibilities of increasing the crop area are very limited. But the yields can be increased substantially, provided prices of agricultural products are maintained at levels which justify increased applications of artificial fertilizers. Higher yields might also result from other more intensive farming practices.

#### Enlarging the agricultural area

One of the most difficult and also most costly features of Germany's agricultural self-sufficiency program is that of increasing the agricultural area. A brief review of past experience in developing land resources is helpful in judging what might be expected in the future.

Under normal conditions, one might expect a conversion of plowland into forests or pastures because of the cessation in population growth and the high percentage of poor soils. Such a development occurred in France between 1902 and 1913, during which period natural pastures increased from 9,718,000 acres to 12,834,000 acres.

With Germany nearly shut off from the world, however, a marked contraction of the plowland would be unlikely. Moreover, so long as the policy of the Government is definitely directed toward agricultural self-sufficiency, plowland will probably increase. The small amounts of plowland which will be converted to other uses may be more than offset by bringing waste land into cultivation. Although the supply of such land is rather limited and can be improved only at a rather high cost, relatively substantial additions to the agricultural area from this source might be expected.

In the post-war years of prosperity, the idea was fast gaining ground that the poor sandy soils, cleared in the last pre-war decades under the stimulus of the high protection granted the production of rye and oats, should be used again for forests, as they are too dry for conversion into pastures or meadows. Those soils which are appropriate only for rye production (with lupines plowed under and with heavy applications of fertilizers) were to have been reforested. Part of the land on which only rye, potatoes, and oats could be grown was to receive the same treatment, because two of those three crops were grown in excess of requirements and all were produced at very high costs. Altogether, the area concerned was estimated, rather conservatively, at about 2,500,000 acres. 21/

The introduction and development of the sweet lupine will undoubtedly improve the usefulness of the lighter soils. It is much more valuable than the bitter lupine, which was formerly the only legume that would grow in the light soils of eastern Germany. The sweet lupine was developed by two botanists, working independently, and the new selections are now appearing on the market. Although shattering badly when ripe, sweet lupine

21/ "Aufforstung landwirtschaftlicher Grenzertragsbodenklassen" in Deutsche Agrarpolitik, Vol. 1, p. 351.

is said to produce good yields as a hay and silage crop. 22/ Utilizing light soils for sweet lupines will not change the situation altogether, however, since the absence of legumes that will grow in them is not the only problem offered by these soils. Their deficiency in nutritive substances and poor capacity for preserving moisture also are important.

Aside from the lighter soils of eastern and northern Germany, a change in land utilization was considered desirable for the poorest and steepest mountain lands. Since even the low yields obtainable require heavy applications of labor and power, the conversion of a rather considerable part of such plowland into meadows and pastures was advocated, with reforestation suggested for part of the pasture land.

These proposals concerning the utilization of land materialized to only a small degree. Between 1927 and 1931, the acreage in forests increased by only 91,427 acres. The plowland, it is true, was reduced by almost one percent in those 4 years, but the agricultural area declined only 0.15 percent. As the depression became more severe, the reforestation of light soils was forgotten. Thus, from 1931 to 1934 the acreage in forests increased by only 35,000 acres or 0.1 percent. Since there was a surplus of labor on farms, a reduction of the mountainous plowland also lost significance. Conversely, the idea that the agricultural area should be enlarged rather than contracted gained many supporters. Since little suitable land was available which could be reforested, attention was directed toward waste land. Formerly, it was generally accepted that money invested in these soils had to bear a fair rate of interest and that no really great sacrifices on the part of the State should be involved. In the depression, however, it has been stressed that, in view of the great number of unemployed laborers, Government subsidies on a very large scale are justified. 23/ With the advent of National Socialism, the reclamation of waste land for agricultural purposes was given renewed impetus.

During the last 40 or 50 years before the war, only about 400,000 acres of waste land (in Germany, waste land includes very poor pastures) were made suitable for agricultural use. Subsidies and credits were granted for this purpose, however, by the Prussian law of November 7, 1914, and similar measures were passed for other parts of Germany. Moreover, it became easier to convert waste land to agricultural use because of the more extensive use of artificial fertilizers. Lands that were improved between 1913 and 1930 are estimated at 717,000 acres, or an average of some 42,000 acres per year. Of this, 136,000 acres became plowland and 581,000 acres meadows and pastures. In spite of the subsidies, only a part of this new land rendered a fair return. 24/

22/ Professor E. Baur, "Ueber den Anbau der Süsslupinen", Deutsche Landwirtschaftliche Presse, 1933, No. 12.

23/ See, for example, A. V. Batocki, "Verbesserung und Neugewinnung von Kulturland" in Deutsche Agrarpolitik, Vol. II, pp. 365 to 374.

24/ See Stadermann, "Urbarmachung von Oedlandereien" in Deutsche Agrarpolitik, Vol. II, pp. 375 to 391.

There were still 10,625,000 acres available in 1931, according to Stadermann, that were worth bringing into cultivation, of which about 2,000,000 acres are now in pasture.<sup>25/</sup> This land was equal to about 12 percent of the total agricultural area, and he believed that 20 percent of it could be converted into plowland and about 80 percent into meadows and pastures. He outlined a project for developing it over a period of 30 years with a Government subsidy equal to about 37 percent of the total cost. When the results of improving waste land between 1913 and 1930 are considered, however, the subsidy proposed by Stadermann appears inadequate for inducing landowners to improve all the waste land, particularly in the allotted time. The present Government is, however, prepared to grant greater subsidies; and, if large amounts continue to be spent on waste land regardless of the probable outturn, a relatively important area may be secured. Much of this work has been carried out by the compulsory Labor Service.

A recent announcement indicates that 200,000,000 Reichsmarks (about \$80,000,000) will be used for land reclamation in 1937 and even larger amounts are planned for succeeding years. If all the land Stadermann considered worth converting to agricultural uses should eventually be developed, the plowland would be enlarged by about 4 percent and meadows and pastures by about 30 percent.

The limited possibilities for increasing the agricultural area have been indicated. Moreover, there is always some diversion of agricultural land to other purposes such as roads, buildings, and recreation facilities. The results of the 1935 and 1936 surveys of land utilization are rather significant in this respect. The supply of moor land declined by 30,000 acres, the supply of other used waste land by as much as 73,000 acres, and forest land by 74,000 acres; but agricultural land also was reduced by 13,000 acres.

Only a small portion of waste land can be converted into plowland, according to Stadermann, and plowland is the most intensively used portion of the agricultural area. In former years the reduction of the land in fallow<sup>26/</sup> was an effective means of increasing the cropped plowland or of offsetting the decline in plowland. But this source is nearly exhausted. From 1927 to 1931, the decline in fallow land nearly offset the decline in plowland. While plowland was reduced by almost 1 percent, cropped plowland declined only by 0.2 percent.

In the depression years the decline in fallow land was larger than the decline in total plowland, and the cropped plowland was even somewhat

<sup>25/</sup> A comparable figure given by Dr. J. Schäffer, Stabsabteilungsleiter im Reichsnährstand (Deutsche Getreidezeitung, March 15, 1935) is only 6,178,000 acres. But Schäffer adds to this figure 1,250,000 acres now under sea, which in his opinion can be reclaimed for agricultural purposes. Similar figures are given in Neues Bauerntum, Berlin, April 1935, p. 187.

<sup>26/</sup> Fallowed land as reported includes some plowland used temporarily as pasture.

enlarged. A further contraction of the land in fallow took place in succeeding years, but in 1936 only 2.2 percent of the plowland was not cropped. A decrease in fallow land from present levels is unlikely because the climate is so severe in some parts of Germany that thorough preparation of the land is impossible without having some land in fallow.

A recent survey revealed that double cropping or the use of the land for growing one crop for harvest and another for plowing under in the same year is much more extensive in Germany than had been generally realized. Yet climatic conditions are generally exceedingly unfavorable for two crops in one year. This method of increasing agricultural production, therefore, also has very definite limitations.

#### Improving yields per acre

Following the depletion of soil fertility during the war, Germany showed remarkable ability to rebuild the fertility of its farms. Yields per acre increased steadily, though in the last few years the increase has shown a tendency to slow down (see figure 4). It cannot be definitely stated whether this slowing down resulted primarily from the fact that yields have attained such a high level that further progress must necessarily be slow or whether there is some other cause. The fact that yields recently have been increasing faster on farms and in regions normally having lower yields than on farms with high yields supports the first view to some extent.<sup>27/</sup> Data from farms keeping accounts, however, also show the beneficial effects on yields of increased applications of artificial fertilizer.

As indicated in table 9, it has been computed that by a relatively small increase in the application of commercial fertilizers over the amount used in 1931 and by the use of high-quality seed, substantial increases in yields can be obtained. The utilization of artificial fertilizers now exceeds the amounts assumed, but the actual yields are still considerably less than computed. Experience shows that it takes considerable time for the majority of producers to attain the more or less optimum conditions assumed in the computations.

But the yields computed are probably not the highest attainable. At the time the estimates were made, the further developments in the use of commercial fertilizers could not be foreseen. A recent decree provided for a reduction of 25 percent in the prices paid by farmers for potash and of 30 percent for nitrogen fertilizers. The Government, of course, is exerting considerable effort toward encouraging farmers not to decrease their total expenditures for fertilizers. It seems probable that the extremely favorable price ratio between agricultural products and commercial fertilizers will in many cases warrant the use of fertilizers in excess of

<sup>27/</sup> This tendency is shown by the data of accounting farms. See Fensch in Veröffentlichungen des Deutschen Landwirtschaftsrats, No. 16, 29, and others.

the amounts desired by the Government. At least for the next few years, therefore, increases in yields may be an important means of increasing agricultural production in Germany.

Table 9. Actual yields per acre of specified crops, annual 1931, average 1930-1934, and estimated attainable yields

Crop	Unit	Yields per acre			Percentage increase of estimated attainable yields over	
		Actual		Estimated attainable	Actual	Av. actual
		1931	Average 1930-1934		1931	1930-1934
Rye .....	Bushels	25.5	27.6	33.1	30.0	19.9
Wheat .....	"	31.1	32.0	36.2	15.7	13.1
Barley .....	"	34.5	37.0	44.1	27.8	19.2
Oats .....	"	53.0	52.5	62.5	17.9	19.0
Potatoes .....	"	228.1	237.9	293.2	28.5	23.2
Sugar beets ...	Sh.tons	12...	13.1	14.4	16.1	9.9
Mangels .....	"	16.4	16.8	20.7	26.2	23.2
Clover & alfalfa	"	2.5	2.4	3.9	16.0	20.8
Natural hay ...	"	2.0	1.9	2.3	15.0	21.1

Kappen and Henkelmann, "Düngung und Pflanzenzucht als Mittel der Produktionskostensenkung" in Deutsche Agrarpolitik, Vol. 1, pp. 663 to 666.

Another way in which to increase production is through a shift from low-yielding to high-yielding crops. Such a shift will probably take place to some extent. The crops that yield heavily, however, are primarily those that produce carbohydrates. Crops which furnish proteins, fats, and fibers, the products most needed, are low yielding under German conditions. The shifting of acreage to these latter crops, therefore, may well offset the gains achieved by shifting another portion of the acreage to heavier-yielding crops.

#### Self-sufficiency impracticable

In conclusion, it would appear that some increase in total agricultural production is probable. It will be largely a matter of policy in what sector the additional production will be directed.

If costs were given proper consideration, Germany should not attempt to produce any fats or fibers before the full requirements in carbohydrates are covered. Considerations of defense, however, make it preferable to produce some fats and fibers and have some deficit in carbohydrates. For example, Germany wants to cover all flax requirements, but these constitute only a very small portion of total fiber requirements. The acreage in rape and flax together has been expanded more than tenfold from 1933 through 1937. The acreage in alfalfa has been enlarged by about 20 percent during the same period. As total agricultural production increases, it should be possible

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to devote additional areas to these crops, although the quality of soil required by flax and alfalfa imposes serious limitations.

.. It has been shown that the degree of self-sufficiency reached in 1933 was to a considerable extent the result of a material reduction in per-capita consumption. In succeeding years, however, the success of the Government's employment program, even though average wages were kept down, resulted in a broadening in the demand for staple food products. Although the droughts of 1934 and 1935 affected crop production, agricultural production as a whole increased up to 1936, but not as fast as demand.

Moreover, Germany could not, or was reluctant to, provide all the foreign currency which was necessary for covering the deficit of agricultural products by imports. The requirements of the German economy as a whole and the policy of rearmament were given precedence, with the result that agricultural developments have taken on an abnormal character, particularly in the livestock and feed sectors. Cattle numbers were permitted to decline more than was warranted by the scarcity of feed in the drought years, while consumers' demands were left unsatisfied. The difficulties experienced by Germany in providing the necessary food for its population have been in fact so large that they could easily create an impression that the drive toward self-sufficiency has been an entire failure. This conclusion would be incorrect, however. As time goes on, the results of the production drive are expected to be more in evidence, and the situation may become less stringent. But for a rather long time the increases in production will not be so large as to permit a contraction in imports and an increase in per-capita consumption. This is especially true if the increase in the birth rate noted during the last 2 years is maintained.

An additional obstacle to Germany's production program is the development during the past year of a farm-labor shortage. Energetic steps have been taken to cope with the problem, which has resulted from low wages and unsatisfactory living conditions. Over a period of years the increased use of farm machinery will be of assistance, but the immediate shortage must be taken care of in some other way.

In short the situation can be stated as follows: Material progress can yet be made, and, as a matter of fact, is being made. Considerable waste can still be eliminated, various economies are possible, more productive use can still be made of the land, plant breeders still have contributions to make, and more productive livestock can be raised. There is still room, in many branches of farming, for far-below-average producers to work toward a "good average", which a popular slogan now proclaims as the goal of agriculture's efforts as opposed to striving for individual records.

The possibilities for a "totalitarian" State to enforce its policy, it must be understood, are great, particularly in a comparatively small country like Germany, where the people are noted for their readiness to

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accept regulations. That it should be possible, for instance, to utilize masses of workers from the Labor Service force to speed up potato harvesting or other harvest operations, when bad weather threatens, is an impressive example of what those possibilities are. Moreover, the stimulation in the form of a favorable ratio of prices of agricultural products to the prices of means of production (wages of farm help were contracted drastically) is so large that considerable progress can be expected without any compulsion. But further expansion in domestic farm production will necessarily be slow and gradual, and Germany is unlikely to cover her total deficit in fibers, fats, and protein feed in the foreseeable future.

It is apparent, furthermore, that current results are being achieved under the greatest stress and strain and that much is being done without regard to the economic costs involved. Unexpected developments, such as a serious food crisis or a general economic and financial breakdown, could conceivably interrupt present agricultural tendencies and lead to a modification of policies.

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#### NEW SELF-REGULATION OF AGRICULTURE PLANNED IN THE NETHERLANDS

A draft of a new law for regulating agriculture, just published by the Netherlands Ministry of Agriculture, aims at changing all existing "crisis" measures into measures of a permanent character, according to a report from the Berlin office of the Bureau of Agricultural Economics. This is to be accomplished by decentralizing existing "crisis" agencies and placing responsibility for regulating agriculture in the hands of organized groups of producers. The proposed law has been published in order to give agricultural organizations in the Netherlands an opportunity to study and pass judgment upon its various provisions before a bill is submitted to Parliament for enactment into law.

Under the proposed legislation, producer groups would be charged not only with the administration of legislation affecting agriculture but also to some extent with the determination of such measures. They would take over functions previously exercised by the Government institutions set up under the Agricultural Crisis Law of 1933.

The extent to which the permanent organizations would make use of their rights to regulate agriculture under the proposed law apparently is to be left largely to the organizations themselves. In principle, the immediate legislative power would remain in the hands of the Government, but it is contemplated that at least a part of such power would be transferred to the new bodies. While the proposed law gives the permanent organs the widest possible scope for development, the State reserves general supervisory rights to itself as well as the right of direct action should such organizations act in a manner considered detrimental to the general welfare. It also stipulates that the abolition of existing import and export monopolies, domestic taxes, and price regulations are to remain in the hands of the Crown.

The draft of the new law provides for the establishment of administrative organizations, called "Landbauräte" (Agricultural Councils). Such Councils, for instance, will be established for field crops and also for the poultry, livestock, dairy, horticultural, and fishing industries. Special councils also may be established within these individual agricultural branches, as for example a potato flour council or a flower bulb council, if such should prove advisable.

The individual councils would be governed by regional or "provincial councils." For the furtherance of their aims, the provincial councils may establish provincial district commissions. The various individual agricultural councils as well as the provincial councils are to consist of not more than 15 members each, all of whom are to be nominated by the Government. Apparently producers, the trade, processors, and agricultural laborers are to be represented in these councils.

The proposed functions of the agricultural and provincial councils are to be threefold, advisory, executive, and legislative. The legislative powers would consist of the drafting of regulations, which are to be binding upon member farmers. These would pertain especially to the regulation of production, and in particular to the regulation of acreage and measures for the improvement of production. The councils also would have authority to exert a price-regulating influence in relation to exports. Moreover, they would have authority to give financial support to producers. Only the Government, however, would have the right to fix guiding prices. Should the Government disapprove of any measures taken by the councils it may suspend or annul them entirely.

The councils are to be given a certain amount of independence with respect to financial matters. Each of them, for example, would have its own budget with its own receipts and expenditures but subject to approval of the Government. In addition, an agricultural fund would be established into which the councils would pay a share of their receipts. This fund would be established by a special law and from it the individual councils would be supplied with funds necessary for accomplishing their objectives.

Finally, the proposal provides the permanent organizations with a legal basis for the imposition of penalties. Violations of the law are to be judged and punished by special judges, who are to have confiscatory powers.

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#### POLAND ACTS TO CHECK PRICE ADVANCES

The steady upward movement of prices, particularly grain prices, in Poland during the past year and especially in recent months, coupled with the unfavorable outlook for 1937 winter grain crops, has led the Polish Government to adopt a series of measures to check what is regarded as a nationally unsound development in the price situation, according to a report to the Bureau of Agricultural Economics from its Berlin office.

Rye prices have practically doubled and wheat prices have risen by 50 percent in a year's time. After temporarily forbidding the exportation of rye in January, though permitting certain exports in February in order to fill contracts already made, exports of rye have recently

been suspended entirely. Effective March 15, 1937, export premiums were abolished for all grains and grain products except barley.

Finally, on April 7, the Ministerial Council decreed a series of measures aimed at combatting the generally rising tendency of prices, among which are a number of great importance from an agricultural standpoint. For example, the exportation of bread grain has been completely prohibited for the balance of the season and milling extraction percentages have been fixed at 70 percent for rye and 65 percent for wheat. Furthermore, in order to discourage feeding of bread grain, provision has been made for the importation of feedstuffs. In addition, import quotas for various foodstuffs are to be increased and import charges on such products reduced.

The Ministerial Council has likewise set up a special Commission for Price Control. This Commission is authorized to work out and recommend measures affecting prices, including such as relate to quotas and foreign-exchange allotments, to reduction or suspension of customs duties, and to alteration of railroad rates.

These new measures are motivated by internal price and market considerations, and not by trade or currency difficulties, according to the report. Because of the general rise in world prices, Poland has apparently profited in exports as much as it has lost on the import side. The trouble is that living costs have begun to rise, the foodstuffs index, for example, increasing by 10 percent in a year's time. Industrial labor has begun to manifest its dissatisfaction in a wave of strikes. The latter development constitutes a danger to Poland's continued ability to maintain its export position, not to mention other internal difficulties which may accompany a continued advance in prices.

#### COLLECTIVE CONTRACT FOR FARM WORKERS IN FRANCE

A collective contract to regulate working conditions of farm laborers in the Nord Departement of France was signed on April 6, 1937, by representatives of farm owners and of farm laborers, according to a report from Consul Leonard G. Dawson at Lille. While the contract applies to only one Departement of France, it is of interest since it indicates methods being adopted in that country to regulate hours and wages of farm workers.

The farm owners were represented by the president of the "Fédération Agricole du Nord de la France" and the president of the "Société des Agriculteurs du Nord." The farm workers were represented by delegates of the "Confédération Générale du Travail", and of the "Confédération Française des Travailleurs Chrétiens." The "Confédération Générale du

"Travail" is the nation-wide organization of workers, so that the interests of farm laborers are now brought within the strongest circles of organized labor.

The collective contract now signed concerns about 31,000 farm owners and operators and about 35,000 farm laborers in the Nord Department. The agreement is a prolongation, with certain changes, of the agreement signed on July 29, 1936, which expired on January 31, 1937, and is to remain in effect up to January 31, 1938.

The new contract reenacts the former clauses concerning the right of farm laborers to organize in unions, the rights of workers' delegates, the weekly rest period, and annual vacations with pay. The amount of wages to be paid is to be settled by agreements to be entered into between employers and workers in the various localities.

The subject of hours of work was the one that offered the most difficulty in settlement. Under the previous contract, the work hours were fixed at 10 hours daily during the summer months, and at 9 and 8 hours daily during the late fall and winter months, respectively. The new collective contract, however, fixes the maximum number of work hours during the year at 2,700, the distribution of these hours to be made in the local agreements, according to the kind of work done, but not to exceed in principle 10 hours per day.

The work hours may exceed 10 daily during the season of harvests, in gathering perishable crops, and for a period that shall not exceed 30 days per year. In regions where the annual maximum of labor hours of 2,700 is insufficient to insure proper care of livestock and work animals, the time of actual work may be increased but not to exceed one hour daily. The work hours and the work conditions of cattlemen, sheep herders, farm servants, and farm foremen are not regulated by the contract. These are to be regulated in accordance with custom and necessity, in the best interests of the parties concerned.

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